Hospira MedNet® Software Suite

5.4/5.5 IT Training Guide

These training materials are provided for the convenience of the customer to familiarize users with the use and functionality of Hospira MedNet® Software. Prior to use, each user should fully read and understand the Hospira MedNet® User Guides and Infuser System Operating Manuals and other documentation provided with Hospira MedNet® Software. The health information contained herein is provided for informational purposes only and is not intended to replace a discussion with a healthcare provider. All decisions regarding patient care must be made with a healthcare provider and consider the unique characteristics of each patient.

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Course Introduction

Purpose of this Training Guide

This Training Guide is designed to complement live user training for Hospira MedNet® Software Suite (HMSS). This material is provided for the convenience of your institution to familiarize users with functions and procedures related to HMSS.

This Training Guide is not intended to replace the Hospira MedNet® User Guide. Prior to use, each user should fully read and understand the Hospira MedNet® User Guide, Infuser System Operating Manuals, and other documentation provided with the system.

Intended audience

Hospital personnel who will use the HMSS product must receive training. The training that each individual requires will vary according to specific job responsibilities and level of involvement with HMSS.

The training may follow several "paths," each tailored to a specific audience. The curriculum areas and audiences are a suggestion; the training path assigned by each institution may vary. Due to the multidisciplinary involvement of HMSS users, certain training areas pertain to multiple audiences.

Training area	General content	Primary audience
Module 1. Overview	HMSS functions and components User teams Getting started (log on)	All users; prerequisite for next sections
Module 2. IT Implementation	System administration User administration Network architecture and communications Database administration	IT Team (Required) Drug Library Transfer Team (optional)
Module 3. Infuser Maintenance and Management	Infuser hardware and maintenance Status definitions Access point mapping	Device Tracking and Maintenance Team IT Team Drug Library Transfer Team
Module 4. Library Transfers	Library statuses Infuser transfer statuses	Drug Library Transfer Team
Module 5. Reporting	Reports in Hospira MedNet® Software	Data Gathering and Report Team
Module 6. HMMS	For use in HMMS (ASP) accounts only	IT team
Separate training*		

Hospira MedNet® Meds Software	Drug Library creation Using Meds Software Infuser-specific configurations	Drug Library Creation Team

*Training on the Hospira MedNet® Meds Software will be given separately from the IT implementation training.

How this Training Guide is organized

This Training Guide is composed of Modules. This first Module is addressed to all personnel who will use HMSS. Subsequent Modules are grouped by training area and targeted to specific audiences. Modules are subdivided into short chapters, each of which pertain to one aspect of the system and associated job tasks.

A legend at the beginning of each chapter shows the primary audience and subject matter. The legend serves as a guide, to help learners quickly identify the material they need to know.

Who: Who should learn this material	**What:** What does this section cover

Conventions used in this Training Guide

The document uses the following conventions:

- The terms “Hospira MedNet® Software Suite,” “HMSS” and “the Software” are used interchangeably throughout this Training Guide.
- Illustrations and screen representations are for illustrative purposes only and may vary from the actual software.

Further information on procedures

The HMSS User Guides provide step-by-step instructions for each task. Refer to the User Guides for reference beyond the scope of this training.

Technical assistance

The Hospira Technical Support Operations Center (or TSO) is available 24/7 for questions about the system. The phone number for this resource is 1-800-241-4002, Option 4.

HMSS IT Implementation Training Guide

Module 1. Hospira MedNet® Software Suite (HMSS)

All teams who use Hospira MedNet® Software Suite (HMSS) require an understanding of the overall system. IT, Biomedical, Pharmacy, Clinical, and other users will all benefit from learning about the different aspects of the system and how they relate to each other.

This Module provides an introduction to HMSS and explains how to log on to the system and get started.

This Module consists of 1 section:

- Overview of HMSS

For training purposes only.

Refer to the detailed instructions Hospira MedNet® User Guides and Infuser System Operating Manuals prior to use.

1-1 Overview of HMSS

Who: All users	**What:** Overview of HMSS components, user tasks, and roles

Hospira MedNet® Software Suite (HMSS) is a networked medication safety and infuser management tool for use with compatible Hospira IV infusers. HMSS provides trained hospital professionals with the ability to define recommended drug dosing parameters, send and receive information between the server and infusion pumps, and to collect data and generate reports pertaining to IV infusions.

Upon completion of this section, users will be able to:

- Explain the function of HMSS
- State the main components of the system
- Summarize the roles and responsibilities of different user teams
- Log on to the Software with a personal User Name and Password

What is HMSS?

Libraries that define "best practice" parameters governing the infusion of IV medications. The information is transferred through the system to infusers throughout the hospital. The system tracks and provides reports on infuser usage and any associated **events** or **alarms** (see figure 1-1.1).

The hospital's Information Technology (IT) Department, with the assistance of Hospira technical support personnel, is responsible for installing and configuring the system. The IT Department then maintains the server, network, and databases.

Using the Hospira MedNet® Meds™ Software, pharmacists, physicians, and nurses collaborate to develop a central Drug Library database that resides on the server. After finalization, the Drug Library is transferred through the network to compatible infusion devices throughout the hospital.

At the bedside, the clinician programs the complete order and confirms or modifies the recommended settings defined in the Drug Library. The clinician may customize the medication dose and delivery rate, within specified boundaries or safety limits.

Usage data are collected from the infusers and transferred back to a database, which resides on the server. The data may be used to generate reports ranging from equipment tracking to medication usage.

Drug Library: Collection of medication entries and infuser settings that, when used with compatible infusers, may reduce the frequency of human error by restricting the ways in which medications can be administered.	**Event:** Any occurrence on an infuser deemed worthy of reporting.	**Alarm:** Serious event at the infuser; remains active until someone responds to the alarm at the infuser; e.g., an occlusion in the IV line.

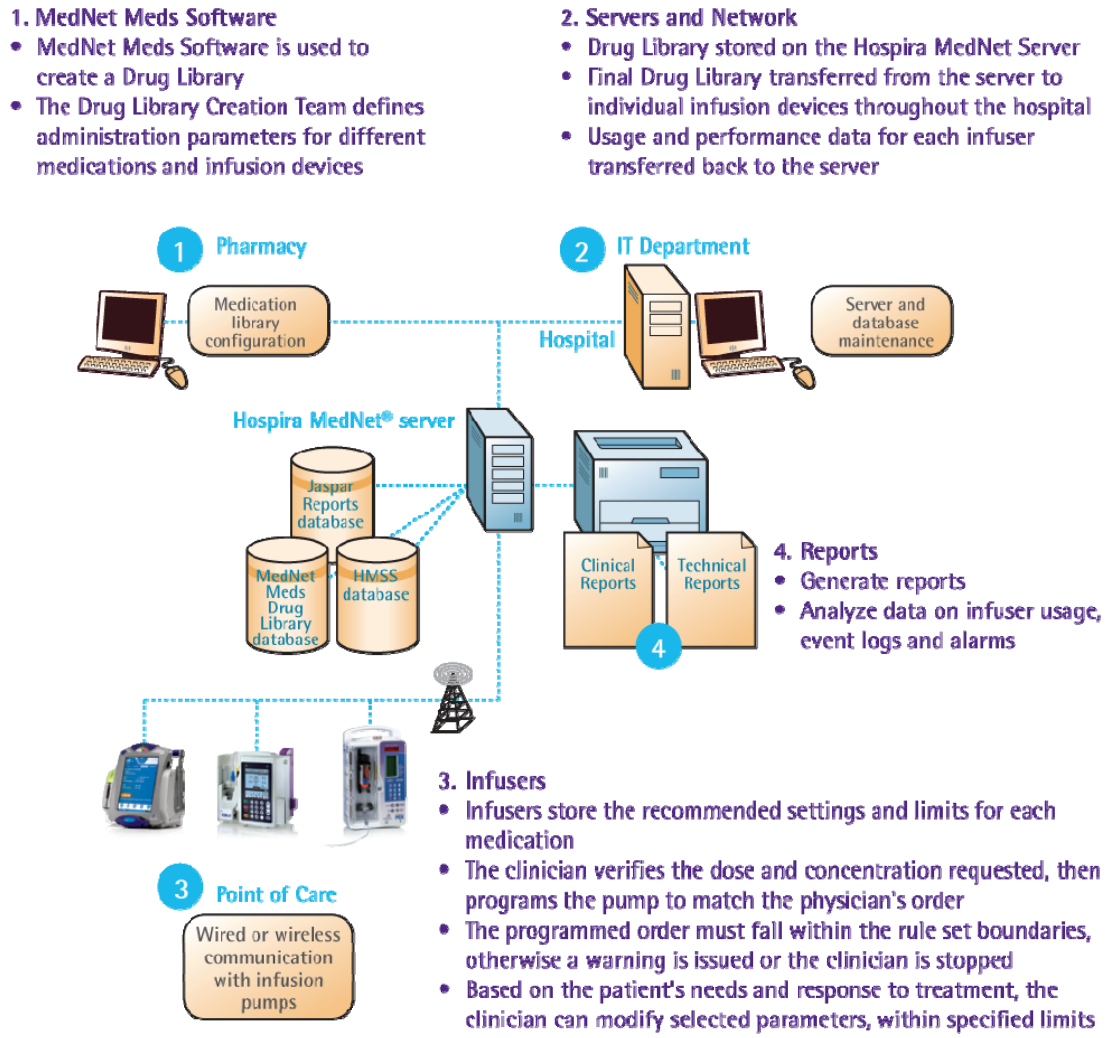

1. MedNet Meds Software
• MedNet Meds Software is used to create a Drug Library
• The Drug Library Creation Team defines administration parameters for different medications and infusion devices
2. Servers and Network
• Drug Library stored on the Hospira MedNet Server
• Final Drug Library transferred from the server to individual infusion devices throughout the hospital
• Usage and performance data for each infuser transferred back to the server
1 Pharmacy
Medication library configuration
2 IT Department
Hospital
Server and database maintenance
Hospira MedNet® server
Jaspar Reports database
MedNet Meds Drug Library database
HMSS database
Clinical Reports
Technical Reports
4
4. Reports
• Generate reports
• Analyze data on infuser usage, event logs and alarms
3 Point of Care
Wired or wireless communication with infusion pumps
3. Infusers
• Infusers store the recommended settings and limits for each medication
• The clinician verifies the dose and concentration requested, then programs the pump to match the physician's order
• The programmed order must fall within the rule set boundaries, otherwise a warning is issued or the clinician is stopped
• Based on the patient's needs and response to treatment, the clinician can modify selected parameters, within specified limits

Figure 1-1.1 Overview of Hospira MedNet® Software capabilities.

System components and architecture

HMSS consists of:

- A single server node containing Microsoft® SQL Server 2005, Jasper Reports, and the Hospira MedNet® Software and related databases
- Web-based clients used to access Hospira MedNet® Software, which resides on the server
- A stand-alone PC client on which the Hospira MedNet® Meds™ Software is installed. Typically, the Meds Software is installed on a desktop computer located in the hospital pharmacy. It is used to create and finalize Drug Libraries.
- An Ethernet network, which links servers, clients, and infusers, if required
- Wireless access points (WAPs), if required
- Compatible Hospira infusers, which may include Symbiq®, Plum A+®, and/or LifeCare PCA® devices

Note: Some clients may have multiple servers. This architecture is custom and will be designed with detailed planning with the client's IT department.

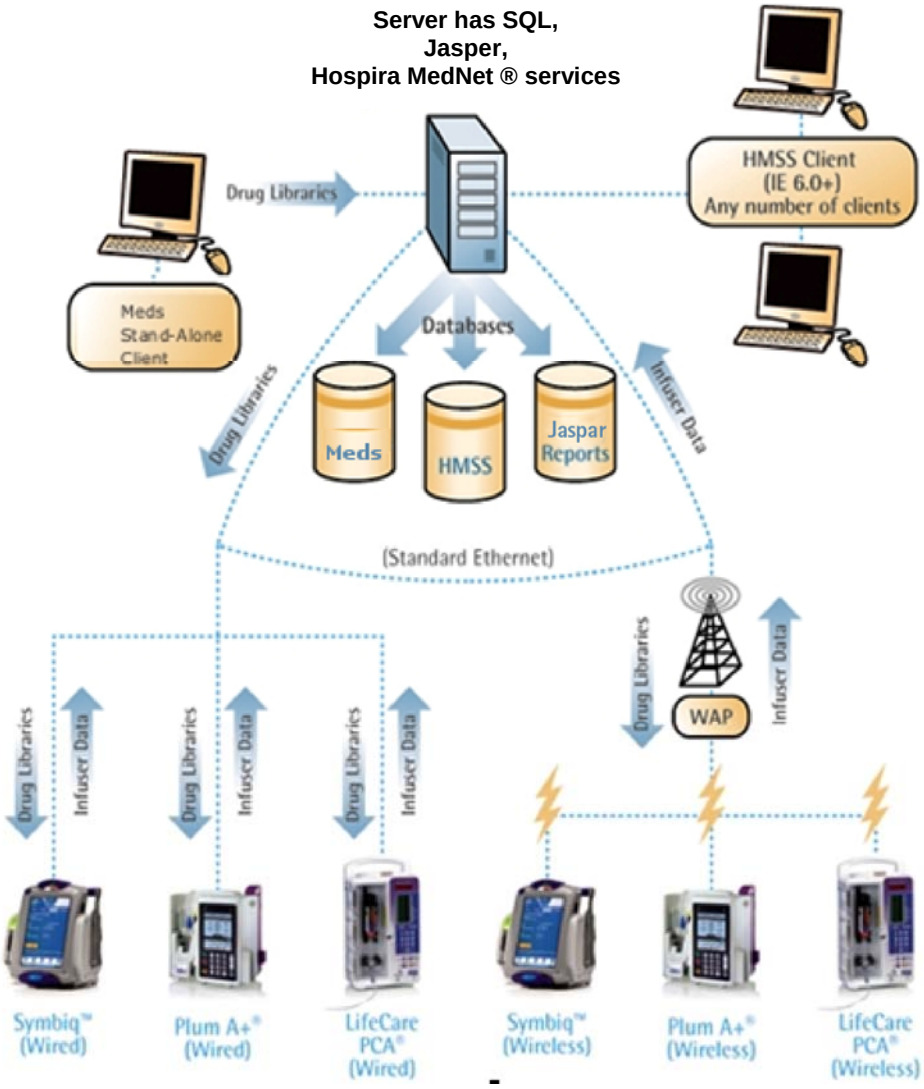


Figure 1-1.2 HMSS system components and network architecture.

HMSS user teams

Drug Library development and system maintenance involves professionals from different disciplines. Hospital staff that use and/or maintain Hospira MedNet® Software, Drug Libraries, and infuser systems should be assigned to teams related to their professional disciplines. An example of a typical task that these teams will be asked to perform together is creating and disseminating a new Drug Library. Creating a new Drug Library in HMSS, and transferring it to the infusers, requires collaboration between different teams.

Sample workflow scenario—Shown to demonstrate team interaction

Once HMSS is installed, an initial Drug Library is transferred to the infusers. The Drug Library will be updated at periodic intervals, typically once per quarter.

Situation: A nurse on the Clinical Team requires a new **clinical care area (CCA)** profile be added to the Library.

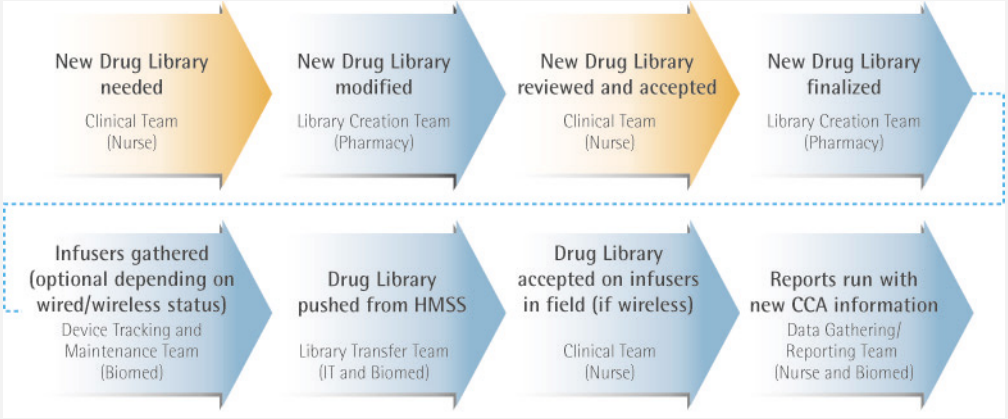

New Drug Library needed
Clinical Team (Nurse)
New Drug Library modified
Library Creation Team (Pharmacy)
New Drug Library reviewed and accepted
Clinical Team (Nurse)
New Drug Library finalized
Library Creation Team (Pharmacy)
Infusers gathered (optional depending on wired/wireless status)
Device Tracking and Maintenance Team (Biomed)
Drug Library pushed from HMSS
Library Transfer Team (IT and Biomed)
Drug Library accepted on infusers in field (if wireless)
Clinical Team (Nurse)
Reports run with new CCA information
Data Gathering/ Reporting Team (Nurse and Biomed)

Figure 1-1.3 Tasks and teams involved in performing a Drug Library update.

Step 1: The nurse issues a request to the Library Creation Team.

Step 2: A pharmacist on the Drug Library Creation Team makes the desired changes to the Drug Library using the Meds Software.

Step 3: The Clinical Team verifies and approves the revision.

Step 4: The pharmacist finalizes the Drug Library via the Meds Software.

Step 5: The Device Tracking and Maintenance Team may need to gather the infusers, depending on what type of network the system is using.

Step 6: The Drug Library Transfer Team "pushes" the new Drug Library from the server to the hospital's infusers.

Step 7: Clinical personnel accept the new Drug Library on the infuser at the patient's bedside or other designated work space.

Clinical care area (CCA): A patient group in which the infusion therapy parameters are the same. A CCA may be a physical nursing unit or may encompass a patient population or a clinical use. (e.g., ICU, Med/Surg, Orthopedics)

Step 8: The Data Gathering and Reporting Team generates and analyzes usage reports, which reflect the new CCA settings.

The workflow scenario in figure 1-1.3 shows the multidisciplinary approach needed for the Hospira MedNet® system to function optimally. The Drug Library process is shown because it involves members of each of the teams who work with the system. If all team members are aware of their responsibilities and know how to complete their tasks, the process will work efficiently.

The following teams are recommendations only. Teams may vary depending upon the needs of your institution.

Suggested teams Roles and responsibilities* *More than one team may perform some tasks; teams should decide to either share or assign relevant duties.	**Team members**										
	IT professional	**Pharmacist**	**Physician**	**Nurse**	**Nursing educator**	**Biomedical technician**	**Risk manager**	**Medication safety officer**	**Purchasing agent**	**Materials manager**	**Central supply manager**
IT Team Administering HMSS System Maintaining network, infuser, and software* Assisting with Drug Library transfers, infuser replacement and return process, ongoing HMSS user training/education/support* Acquiring technical support as needed*	X					X					
Drug Library Creation Team Building and managing Drug Libraries Approving Clinical Care Area (CCA) definitions and Drug Libraries Managing Drug Library updates*		X	X	X			X				
Drug Library Transfer Team Managing Drug Library transfers* Ensuring successful transfers to all infusers	X	X				X					
Device Tracking and Maintenance Team Defining infuser maintenance policies and procedures Collecting infusers for maintenance or Drug Library Transfers as needed Managing inventory of Hospira MedNet® Software and related components; infuser inventory, replacement, and return processes Acquiring technical support as needed*						X					X

Suggested teams Roles and responsibilities* *More than one team may perform some tasks; teams should decide to either share or assign relevant duties.	**Team members**										
	IT professional	**Pharmacist**	**Physician**	**Nurse**	**Nursing educator**	**Biomedical technician**	**Risk manager**	**Medication safety officer**	**Purchasing agent**	**Materials manager**	**Central supply manager**
Data Gathering and Reporting Team Defining processes for collecting infuser data Reviewing standard reports and approving any custom reports Defining and managing Continuous Quality Improvement (CQI) reporting processes and compliance*		X		X			X	X			
Clinical Team Advising on Drug Library definitions and builds Creating and disseminating reports*		X		X	X						
Product Procurement and Supply Team Assisting with infuser tracking, maintenance, replacement, and return processes							X		X	X	

Getting started

Before you can start using HMSS, the System Administrator must set up your User Account and provide you with a User Name and Password.

(The Hospira Service Representative will provide the System Administrator with full access privileges at the time of installation.)

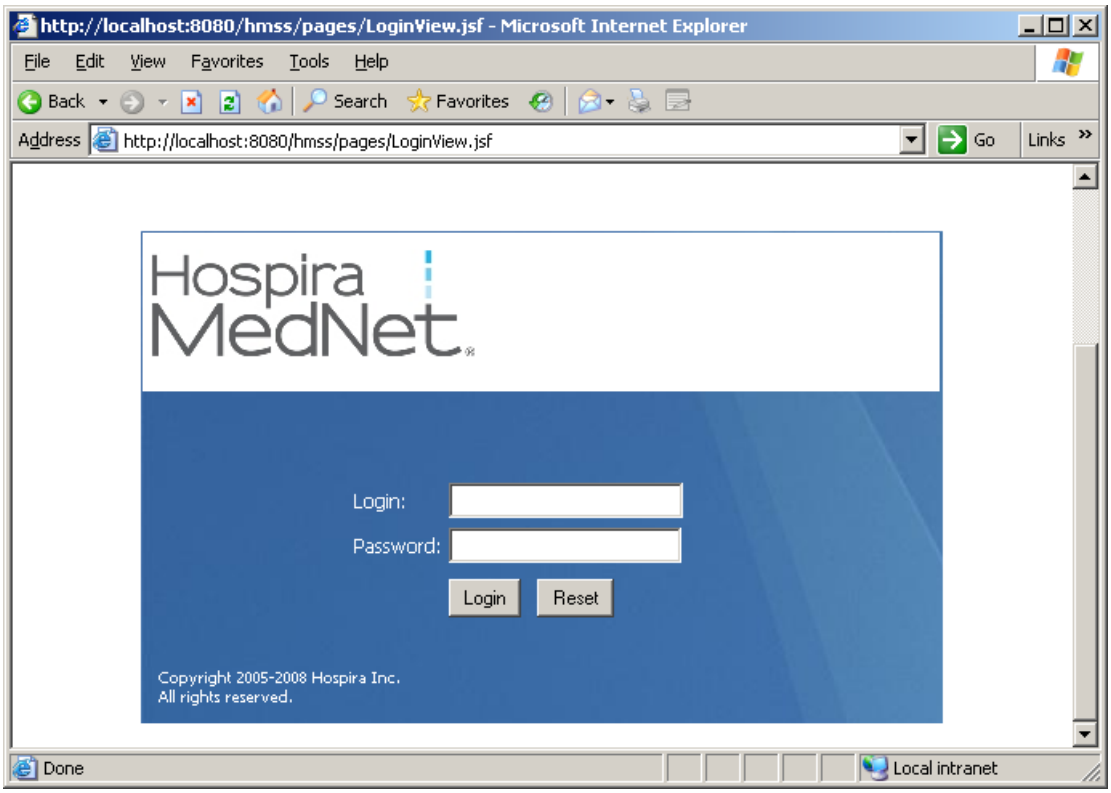
Note: The User Name serves as your login ID. It contains a minimum of 8 alphanumeric characters, with **no** spaces. The User Password is case sensitive.

Accessing Hospira MedNet® Software

To log in to the application:

1. Click the **Hospira MedNet® Software icon** on your desktop; *or*

Open Microsoft Internet Explorer and type the URL for the application in the address bar.



2. At the Login page, enter your Hospira MedNet® **Username** and **Password**.

3. Click **Login.**

The Hospira MedNet® Software Home Page

The Hospira MedNet® Software home page menu consists of a series of "buttons" corresponding to different functional areas of the system.

The System Administrator assigns each user with "privileges" based on clinical roles to access the various areas of the system. Depending on a user's role and responsibility, certain areas may not be available.

Tip

Click the **Hospira MedNet Administrator** button followed by the **My Account** tab to see your account details, including your assigned privileges. You may change your password in the User Account area; however, only the System Administrator can modify your role or privileges.

Once you have finished using the application, click **Logout** at the top right-hand corner of your screen.

Note: Mednet has LDAP capabilities. Please contact your network administrator for LDAP setup.

Self-assessment

Select the best answer to each question.

1. Once HMSS is installed, where does the Hospira MedNet® Meds™ Software application reside?

a) On the Internet

b) On a pharmacist's computer

c) On the Hospira MedNet® Server

2. Which team would most likely be responsible for approving and finalizing a new Drug Library?

a) Clinical Team

b) Data Gathering and Reporting Team

c) Library Creation Team

d) Library Transfer Team

3. Which team would define infuser maintenance policies and procedures?

a) Clinical Team

b) Device Tracking and Maintenance Team

c) IT Team

d) Procurement and Supply Team

4. Who is responsible for setting up User Accounts for each member of the different teams?

a) Hospira Service Representative

b) Pharmacy Director

c) System Administrator

d) Team Leader

Answers: 1. b), 2. c), 3. b), 4. c)

HMSS IT Training Guide

Module 2. IT System Administration

The IT Team requires an in-depth understanding of the hardware, software, and network administration aspects associated with Hospira MedNet® Software Suite (HMSS). The Device Tracking and Maintenance Team and the Library Transfer Team may also benefit from learning about the different aspects of the system and how they relate to each other.

This Module provides training on areas of HMSS for which the IT administrator is responsible.

This Module consists of 4 sections:

- System Configuration
- User Accounts and Administration
- Network Architecture and Communications
- Database Administration

For training purposes only.

Refer to the detailed instructions Hospira MedNet® User Guides and Infuser System Operating Manuals prior to use.

2-1 System Configuration

Who: IT Team	**What:** HMSS system requirements and user-configurable settings

The IT Team is responsible for maintaining system records for Hospira MedNet® Software Suite (HMSS), configuring selected system parameters, troubleshooting problems, and, if needed, working with a Hospira Service Representative to isolate problems. Members of the IT Team must be familiar with the hardware and software requirements for the Hospira MedNet® Server and Meds client applications.

Upon completion of this section, the user will be able to:

- Maintain a record of the hardware and software specifications of their system
- Change system passwords
- Configure selected system parameters including SSL, logging priorities, and login timeout settings
- Document any changes to the system configuration

Key information

Hospira recommends that you maintain an up-to-date record of your system configuration details in one place. This information should be readily available, as it may be needed for troubleshooting by either your own IT Department or a Hospira Service Representative.

Hospira Technical Assistance

Record the name of your Hospira Service Representative for future reference.

Hospira contact information	
Hospira Service Representative	
Hospira Technical Support Operations (TSO)	1-800-241-4002, Option 4

Server overview

Hospira strongly recommends that you do not change the machine name of your server. In the event of a machine name change, a reinstallation of Hospira MedNet® Software will be required. Please contact Hospira for assistance.

Server information	
Machine name	
Backup frequency	(Hospira recommends weekly backups)
SSL	(Default disabled) (only enable with Hospira assistance)
Logging level	(Default INFO)
Login timeout period	(Default 30 min.)
Notes	

Server hardware and software

Two different HMSS server configurations are available, depending on the number of infusers used in your institution. The large server supports up to 2000 infusers. If you add infusers beyond this limit, please contact your Hospira Service Representative to engage in capacity planning.

Your hardware and software must meet or exceed the listed specifications before HMSS can be installed.

- **Tip:** Record your institution's specifications in the Hardware Specifications table for future reference.

Server hardware specifications (minimum requirements)			
	Small server	**Large server**	**Your institution?**
Number of infusers	Up to 99	100 to 2000	
Processor	Xeon 2.4 GHz, 1 processor	Xeon 3.0 GHz or Intel 3.2 GHz, 2 processors	
Memory	4 GB RAM	4 GB RAM	
Power supply	Single	Redundant	
Independent disks for fault tolerance	None	Redundant array On Board RAID 1+0 No Raid 5	
Hard disk drives	2 hard drives (73 GB hard drives mirrored or better)	4 hard drives (73 GB 15K RPM Ultra 320 SCSI drives)	
Network adapter	Dual Port 10/100 Mbps	Dual Port 10/100 Mbps	
Keyboard, mouse, and monitor	Dedicated or KVM	Dedicated or KVM	
CD ROM/ DVD drive	24X IDE Internal	24X IDE Internal	
Backup capability	Internal or External	Internal or External	

Server software specifications		
Area	**Software**	**Format**
Operating system and related updates	Microsoft® Windows Server 2003 Standard Edition, Service Pack 2, 10 CALs (Client Access Licenses) or more	CD-ROM
	See the *Installation and Configuration Guide* for the full list of updates: • Windows updates • Windows server updates • Windows security updates	Download
SQL Server	Microsoft® SQL Server 2005 Standard Edition with Service Pack 2 Version 8.00.2039	CD-ROM
Antivirus/ Security	Microsoft® Windows Malicious Software Removal Tool, V1.1.7 or later	Download
	McAfee Virus Scan Enterprise 8.0.0	CD-ROM
Virtual Environment	Virtual ESX 3.02 and higher VMWare 3.02 or higher or Virtual Server 2007 Dedicated not allocated resources 1 processor, 2 GB RAM for distributed database Database can be virtual (local or distributed) 1 CPU +2GB RAM	

Client PC hardware and software

A client PC with a Web browser is required to access Hospira MedNet® Software hosted on the server. The Hospira MedNet® Meds database is hosted on the Hospira MedNet® Server; however, the Meds Software itself is installed on a standard PC.

Recommendations for Hospira MedNet® or Meds™ client	
Hardware	• 500 MHz processor or better • 1 GB of RAM • 40 GB available hard drive space • 24X IDE Internal CD ROM/DVD Drive, or better • 10/100 Mbps Network Adapter (or better) or 802.11a/b/g if supported based on your purchase agreement/contractual limitations
Software	• Microsoft® Windows operating system (XP Professional with Service Pack 2 or Vista Business [not 5.1]) • Internet Explorer 6 SP2 or higher • Adobe® Acrobat® 8.x Standard/Professional

Software record

Record your institution's software installation and configuration details for future reference.

Software information					
Software	**Version**	**Service pack**	**Configured by**	**Date**	**Notes**
Operating system					
SQL Server					
Antivirus/ Security					
HMSS Server					
Meds™ client					

VPN access

Remote access to the server via a Virtual Private Network (VPN) connection can help Hospira diagnose technical issues and streamline software updates.

Hospira recommends granting VPN access for use during calls to Hospira Technical Support Operations.

- **Tip:** Record your institution's details in the VPN Information table for future reference.

VPN information		
Connection type		
Software		
Login details	**Name:**	**Password:**
Password policy		
Notes		

Any changes to the VPN environment should be communicated to your Hospira Service Representative and to Hospira Technical Support Operations.

User names and passwords

Hospira strongly recommends that you keep a record of all HMSS user names and passwords, and document any changes that are made.

- **Tip:** Record your institution's passwords in the Password Record table for future reference.

Password record		
Software	**User name**	**Password**
Server 2003 – Local Administrator	Administrator	
Microsoft® SQL Server	SA	
HMSS default admin.	mednet_admin	
JBoss (JMX Console)	Administrator	
Hospira MedNet DB	Administrator	

Password policies

Your organization may have a policy for regular SQL System Administrator (SA) password changes. This may include having these passwords remain constant across all SQL servers, or changing the password on a regular basis. Comply with your organization's requirements for passwords, but also inform Hospira of any planned changes. Your system will cease to function normally if the change is not made correctly.

Record your policy for SA passwords and SQL SA password changes.

SA Password policy

When changes are planned, notify:

- All internal teams
- Hospira TSO at 1-800-241-4002, Option 4.

Hospira will update all reference documentation and, if needed, provide assistance in the change process.

Changing the SQL Server password

Please contact the Hospira team to assist with any planned SA password changes to your system. Failure to do so could render your system non-functional.

SSL settings

HMSS can use the Secure Sockets Layer (SSL) protocol to encrypt communications between the server and infusers. SSL can be enabled during configuration of the server and infusers for use with HMSS. If the server is set for SSL, the infusers must also be set to SSL for proper communication.

It may be helpful to temporarily disable SSL encryption for troubleshooting purposes.

Note

If you change SSL configuration during troubleshooting, make sure to reset when you have finished. Please call Hospira TSO at 1-800-241-4002, Option 4, for assistance.

Disabling and enabling SSL

To access the SSL settings:

1. Type the address for the JMX-Console in the Microsoft Internet Explorer address bar:

   http://localhost:8080/jmx-console

2. Log in using the JBoss password.
3. Scroll down to **com.hospira.mms.mmu.services** and click **service=SSLMBean Hospira Inc.**
4. To disable or enable SSL encryption, you must change the security setting for transmissions in both directions (i.e., to and from the server and the device).
5. For each attribute, select **True** or **False.**

Transmission		**SSL settings**	**SSL state**	
From	**To**	**Attribute**	**Disabled**	**Enabled**
Infusers	Server	AllowNonSecureTransmissionFromCEPlum	**True**	False
BPOC handheld devices, PDAs	Server	AllowNonSecureTransmissionFromPDA	**True**	False

(if applicable)				
Server	Infusers	SecureTransmissionToCEPlum	False	**True**

6. When you are finished, click **Apply Changes.**

Note:
Do not change any other settings in the JMX console. Changing settings other than those described above can cause the server software to function improperly.

Diagnostic logging

HMSS is built on the JBoss open source Java EE-based application server. JBoss allows diagnostic logs to be generated for debugging software issues.

The JBoss log configuration sets a threshold level that determines which log messages will be added to the log file. Each log message is assigned a priority level. Log messages with priority levels above the specified threshold are simply discarded. The default logging threshold is INFO.

- **Tip:** Record your institution's settings in the JBoss Logging Priorities table for future reference.

JBoss logging priorities		
Level	**Information logged**	**Your setting?**
DEBUG	Messages intended for developers to diagnose problems. Includes all other logging information. Not recommended for normal operation.	
INFO	The default logging level. Normal system status information such as messages from the CE or PDA. Includes all messages logged under WARN, ERROR and FATAL logging levels.	(default)
WARN	Messages about irregular conditions the software is handling, but does not display in the user interface. Includes all messages logged under ERROR and FATAL logging levels.	
ERROR	Messages about problems the software encounters while conducting specific operations or tasks. Includes all messages logged under FATAL logging level.	
FATAL	Messages that indicate an unrecoverable state.	

Note

The DEBUG logging level should only be used as a temporary measure for troubleshooting purposes. The DEBUG logging level significantly reduces system performance and is not recommended for normal operation.

Changing the logging threshold

Log messages are added to a log file called MMUApplication.log. The MMUApplication.log is located at:

C:\Hospira\Hospira-MedNet-5.4\jboss-4.2.2.GA\server\HMSSv5\log

The logging threshold is stored on the log configuration file called jboss-log4j.xml stored in the JBoss folder.

It may be helpful to adjust the logging threshold for troubleshooting purposes. This is achieved by editing the log4j.xml file.

To change the logging configuration:

1. Log out and close HMSS**.**
2. Backup the following file:
3. C:\Hospira\Hospira-MedNet-5.4\jboss-4.2.2.GA\server\HMSSv5\jboss-log4j.xml
4. Open the file with Notepad.
5. The value for the logging level must be changed at the location in the file**:**
   - **<param name="Threshold" value="INFO"/>**

```
<!--
  | For more configuration information and examples see the Jakarta Log4j
  | website: http://jakarta.apache.org/log4j
 -->

<log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/" debug="false">

  <!-- A time/date based rolling appender for MMUApplication.log-->
  <appender name="MMU_APPLICATION_FILE"
class="org.jboss.logging.appender.RollingFileAppender">
    <errorHandler class="org.jboss.logging.util.OnlyOnceErrorHandler"/>
    <param name="File" value="${jboss.server.home.dir}/log/MMUApplication.log"/>
    <param name="Append" value="true"/>
    <param name="Threshold" value="INFO"/>
    <param name="MaxFileSize" value="10MB"/>
    <param name="MaxBackupIndex" value="2"/>
```

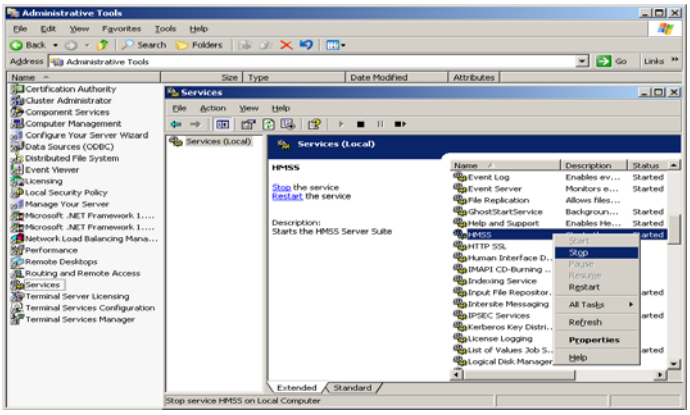
6. Save and close the file.

Testing the logging configuration

The new logging configuration should be verified to confirm proper operation. Before the new settings take effect, the HMSS service running on the server must be stopped and then started again.

To stop the HMSS service:

1. Open the **Windows Control Panel** or **Start Menu.**
2. Double-click on **Administrative Tools.**
3. Double-click on **Services**.



4. Scroll down to locate the HMSS service.
5. Right-click the service and choose **Stop**.
   - Wait for the service to stop.
6. Right-click the HMSS service and choose **Start**.
   - Warning: Do **not** choose Restart.
7. Log in to the application and perform a test sequence to confirm proper operation.

Self-assessment

Select the best answer to each question.

1. Which statement is FALSE?

a) The large server configuration of HMSS supports up to 2000 infusers.

b) The Hospira MedNet® and Meds™ software applications are typically installed on the same PC client.

2. What is the default JBoss diagnostic logging level for HMSS?

a) DEBUG

b) INFO

c) WARN

d) ERROR

e) FATAL

3. Which file must be edited to change the JBoss logging level?

a) log4j.xml

b) MMUApplication.log

c) Web.xml

d) All of the above

Answers: 1. b); 2. b); 3. a)

2-2 User Accounts and Administration

Who: System Administrator or delegate	**What:** Role-based security and user accounts

The System Administrator has the authority to manage user accounts and to assign access privileges for the Hospira MedNet® and Meds™ Software. An IT professional performs System Administrator tasks. In some instances, a delegate from the Pharmacy may also be granted the ability to manage accounts for users involved in Drug Library development.

Upon completion of this section, the System Administrator will be able to:

- Add, edit, and delete user accounts using Hospira MedNet® Software
- Identify and assign appropriate access privileges for different types of users

Access privileges

A range of hospital professionals from different disciplines are involved in aspects of Hospira MedNet® Software and infuser systems. For example:

- IT professionals maintain the system's hardware, software, and network capabilities
- Pharmacists and clinicians collaborate to define and create Drug Libraries
- Biomedical technicians maintain the infusers that connect to the system
- Clinicians validate the Drug Library's recommended settings and safety limits as they program the infusers at the bedside
- Administrators analyze report data collected by the system

Privileges are used to provide role-based security for the Hospira MedNet® and Meds™ Software. Professionals who use the Software require access to different system functions according to their particular roles and responsibilities.

Roles can be assigned either through application level security or via LDAP integration. If LDAP is to be used, the IT team will work closely with the implementation team to create the proper Active Directory groups for the system to use. If LDAP security is used, the users will log into the MedNet system with their usual network credentials.

Privileges Defined

Access Point Mapping

This privilege gives the user access to the Access Point Mapping Tab in the MedNet interface. The Access Point Mapping view allows you to enter a description for each wireless access point. This description appears in online views and on reports that include an infuser's location. It also provides a means to import or export a list of access points and descriptions.

Administrative Setup

This privilege gives the user access to the Administrative Setup Tab in the MedNet interface. The administrative setup configuration typically occurs during the installation of Hospira MedNet Software. The Administrative Setup view allows you to maintain information about your institution, software download settings, software license file, and database maintenance settings.

Authentication Services

This privilege gives the user access to the Authentication Services Tab in the MedNet interface. The Authentication Services configuration is part of the installation of Hospira MedNet Software. This allows the Hospira MedNet server to connect with the LDAP server, if LDAP is used in your institution.

Configure Formulary Interface

This privilege gives the user access to the Formulary Interface Screen in the Meds interface. This allows users to update or change the interface settings with their Pharmacy Information system. Only customers who have bought the Pharmacy Interface option will be properly licensed to see this portion of the system.

Infuser Management

This privilege gives the user access to the Infuser Management Tab in the MedNet interface. The Infuser Management view displays a list of all the infusers in your institution and allows you to maintain inventory status and asset ID information for each infuser.

Library Download

This privilege gives the user access to the Library Download Tab in the MedNet interface. The Library Download view is used to download the active drug library to the selected infusers and to monitor the download status of libraries.

Manage Finalized Libraries

This privilege gives the user access to the Drug Library Management view in the Meds interface. The Drug Library Management view allows you to create, edit, finalize and delete medication entries for the Plum A+®, LifeCare PCA®, and Symbiq® infusers. The Drug Library Management view displays when you open a Worksheet, Active, or Archived library.

Manage Medications

This privilege gives the user access to Manage Medications view in the Meds™ interface. The Medication List contains all medications required for the development of drug libraries for all the infusers used in your hospital.

Manage Worksheets

This privilege gives the user access to Manage Worksheets view in the Meds interface. A Worksheet is a library that has not yet been approved (finalized) for transfer to infusers. You can store multiple Worksheets in the database; however, you may only edit one Worksheet at a time. Users with this privilege but not the “Manage Finalized Libraries” privilege will be able to edit a drug library in Worksheet form but will not be able to finalize it.

My Account

This privilege gives the user access to My Account view in the Hospira MedNet® interface. User accounts provide the basis for system security. The My Account view displays your access information, including Login ID and a Change Password button. The My Account view also displays the roles and privileges you have been assigned. Usually all users will be given access to this tab.

Reports Full

This privilege is assigned at the role level and it gives the user access to any MedNet report that has been placed in the Full Access group.

Reports Limited

This privilege is assigned at the role level and it gives the user access to any MedNet report that has been placed in the Limited Access group.

Software Update

This privilege gives the user access to the Software Update tab in the MedNet interface. Software Update allows the user to set the software version that will be available to the infuser. The software update process is initiated on the infuser. The active infuser software will be used. As of this writing, Hospira does not allow their customers to update the infuser software themselves. Therefore, it is normal for no users (except MedNet_Admin) to have this privilege.

Users and Roles

This privilege gives the user access to the Users and Roles tab in the MedNet interface. Authorized users such as the system administrator are able to define users, roles, and privileges for Hospira MedNet® Software. This is a high-level system administrator type task. Typically, only the person overseeing the entire MedNet system should have this privilege.

View Drug Libraries

This privilege gives the user access to view the Drug Libraries view in the Meds interface. This privilege gives users the ability to view but not change a Drug Library in Hospira MedNet® Meds™.

View Medications

This privilege gives the user access to view the Medications view in the Meds interface.

Privileges by Role

The System Administrator, or a delegated individual, is responsible for creating user accounts and ensuring that authorized users have the appropriate access required to perform their respective roles. When creating a user account, the Administrator assigns user privileges that grant or restrict access to different areas of the system.

Note: Privileges with the Meds Icon are Hospira MedNet® Meds™-related privileges.

	MedNet Roles									
	Admin	Admin Ltd	BioMed	Clinical Admin	IT	Mat Mgt.	Pharm I	Pharm II	Rept Full	Rept Ltd
Access Point Mapping	✓	✓	✓		✓	✓				
Administrative Setup	✓	✓		✓	✓					
Authentication Services	✓				✓					
Configure Formulary Interface	✓			✓						
Infuser Management	✓	✓	✓	✓	✓	✓				
Library Download	✓	✓	✓	✓	✓	✓				
Manage Finalized Libraries	✓			✓				✓		
Manage Medications	✓			✓			✓	✓		
Manage Worksheets	✓			✓			✓	✓		
My Account	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reports Full	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Reports Limited										✓
Software Update	✓	✓	✓		✓	✓				
Users & Roles	✓	✓		✓						
View Drug Libraries	✓	✓		✓			✓	✓		
View Medications	✓	✓		✓			✓	✓		

User account creation and management

The System Administrator creates and manages user accounts from the User Administration area of Hospira MedNet® Software. The area is only visible to the System Administrator, or to users who have been assigned access privileges by the System Administrator.

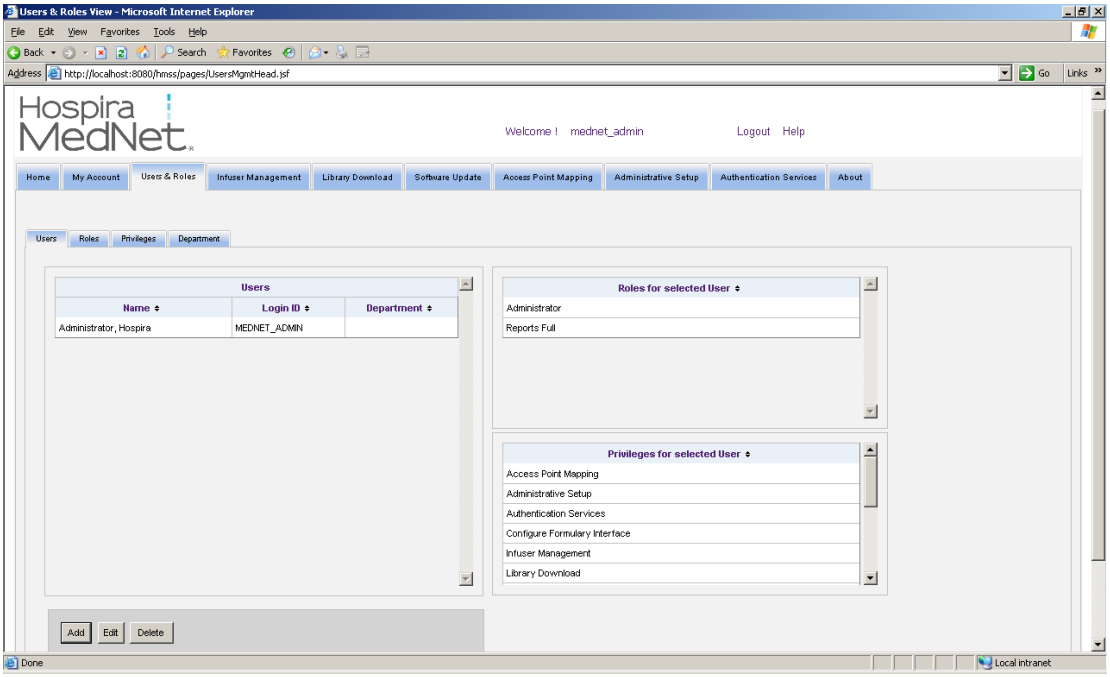
Note: You must be logged in to Hospira MedNet® Software to administer user accounts. For details on how to log in, refer to the *Getting started* section of Module 1.

The User Administration area

To access the User Administration area, click the **Users & Roles** tab.

The User Administration area lists current registered users, along with their respective privileges.

Add, edit, and delete functions are located below the list.



User account conventions

Each user must be assigned a User Name and Password, which are required to log on to the system. The User Name and Password must contain:

- 8 to 20 alphanumeric characters
- **No** spaces

The Password is case sensitive.

Each user must be assigned the User Account privilege. Additional privileges should be selected to match the required job roles.

Adding new user with “application security”

To add a new user:

1. Click **Add**.

In the dialog box:

2. Enter the **Name Information**.
3. Enter the user’s full name, password, and department.
4. Click **Save Changes**
5. Click on the **Roles Tab**
6. Add the Roles for this user.
7. Click **Save Changes**.

The user account is now active.

Editing user accounts

To edit an existing user account:

1. Select the User Name.
2. Click **Edit**.

In the dialog box:

3. Change the user information and the privileges.
4. Click **Edit**.

The user information is now updated. Any password changes will take effect the next time the user accesses the system.

Deleting user accounts

To delete a user account:

1. Select the **User Name**.
2. Click **Delete**.
3. When prompted by the dialog box, confirm the deletion.

The user account is now deleted from the list and the user will no longer be able to access the system.

Adding new user with "LDAP security"

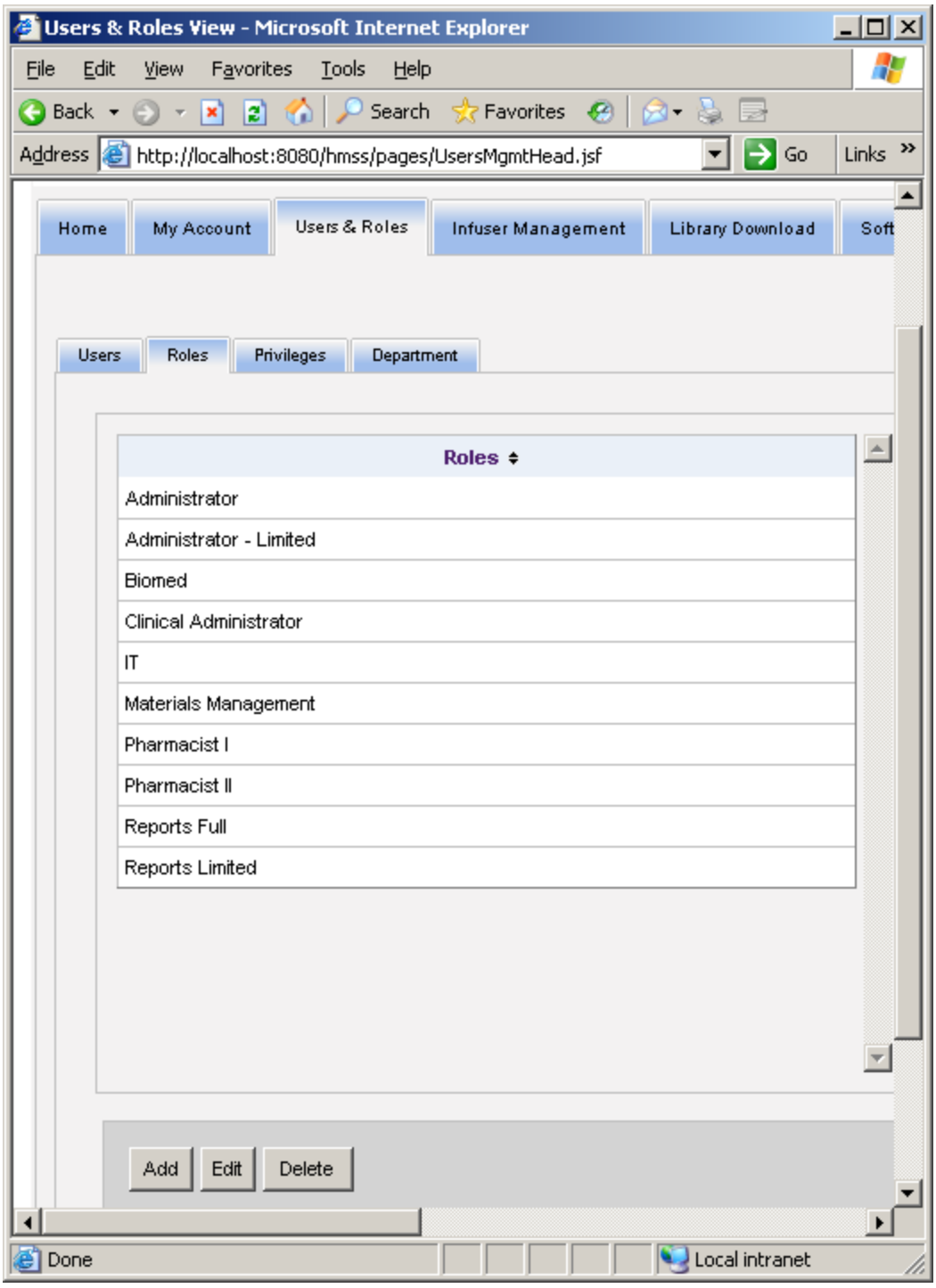
Pre-requisites:

LDAP support must be installed at the time of the Hospira MedNet® Software (HMSS) installation. If it is not, and is later desired, HMSS must be reinstalled.

- LDAP must be configured with the following information. This configuration will be executed by your Hospira IT representative, and should be completed by the time of this training. The necessary information is:
    - URL to Active Directory server (ldap://servername:389)
    - User Role Context (CN=Users,DC=example,DC=corp - would be used for: example.corp)
    - Principal DNS Suffix (@example.corp)
- Note: If any of these variables change in the future, be sure to let Hospira TSO know about this so we can avoid downtime for HMSS users.
- At least one LDAP group must be created for the HMSS system. Ideally, 10 groups are created to correspond with the HMSS roles listed in the matrix on page 43. If all 10 groups will not be used, then only the number to be used must be created.
- Users must be placed in the LDAP groups that will be used for HMSS. Your clinical staff will give you this list of users for each group.

Hospira MedNet® Software roles must be mapped to the LDAP groups that were created for the system. This process is as follows:

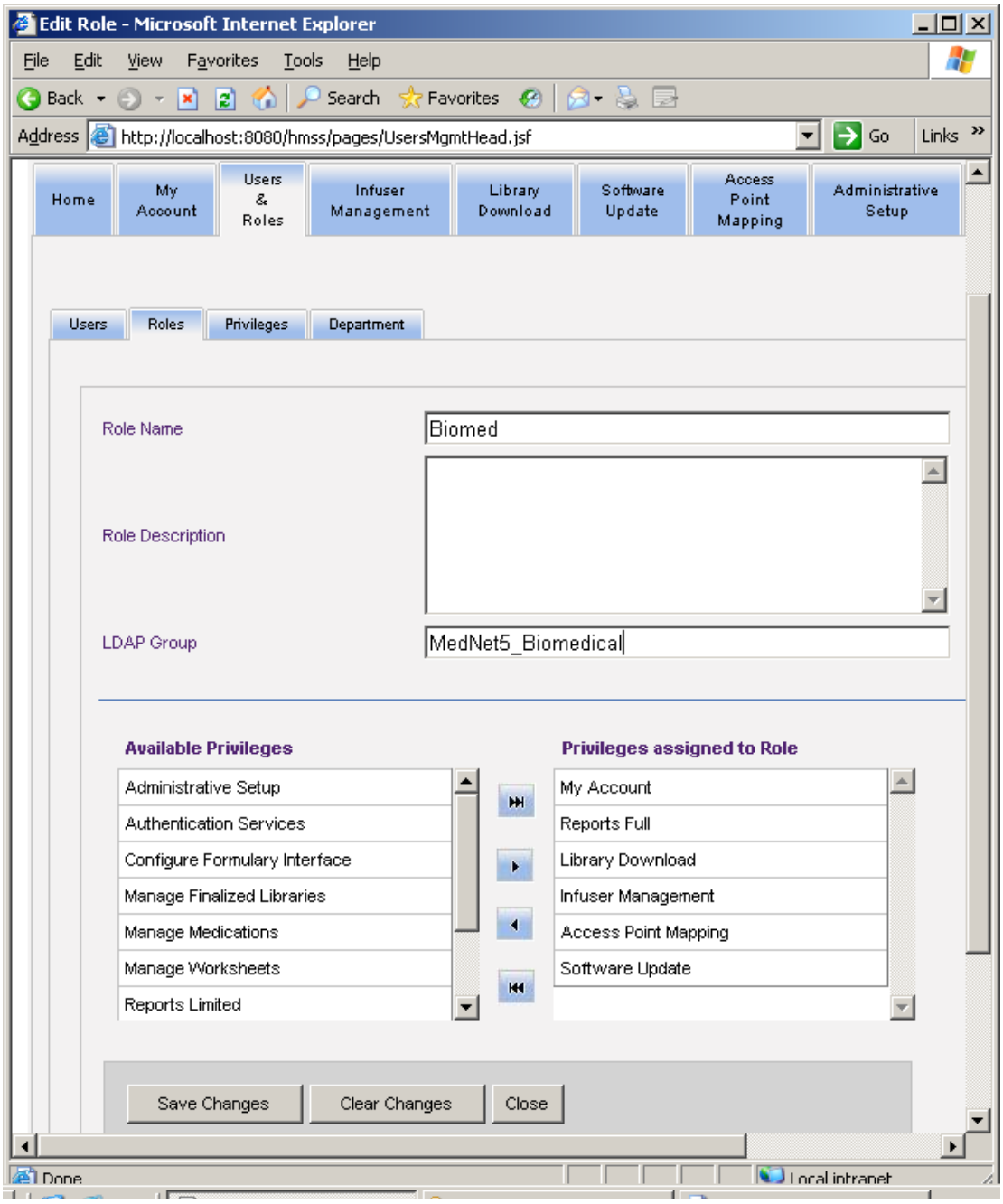
1. In the Users and Roles Tab, click on the **Roles Tab**.



2. Click on the Role you would like to assign, then click the **Edit** button.

Note: Although you may assign Privileges in this dialog box, it is not recommended. The default Roles have the proper Privileges for each job description, and they should not be changed under regular circumstances.

3. **Type in the name** of the LDAP group that corresponds to this Role.
4. Click **Save Changes.**



Notes:

With LDAP, you may not add a new user within HMSS. The user must be created (or already exist) within your LDAP structure.

When you enter the LDAP Group information in the dialog box above, be sure you have typed the group name correctly. HMSS does not validate this back against LDAP during the save of the information. (This is because the HMSS administrator may not have the proper Active Directory permissions to retrieve this information.)

Have users log in to the system as a test, and then verify that they can get in and that their user information has been populated in the user's table.

Editing User Accounts with LDAP enabled

To change users' permissions within HMSS when using LDAP, you must edit the Active Directory group membership of that user. By changing their network groups to a corresponding HMSS group, you will either grant them more or fewer privileges in the HMSS system.

Deleting User Accounts with LDAP enabled

To delete a user from the HMSS system when using the LDAP integration, you must either delete the user from Active Directory (use only in an extreme situation such as a termination of employment), or (more commonly) remove the HMSS groups from this user's Active Directory Account.

Self-assessment

Select the best answer to each question.

1. A new clinical staff member on the Library Creation Team is learning how to build a Drug Library using Hospira MedNet® Meds™ Software. You want to ensure that the user cannot accidentally finalize her "practice" Library Worksheet to an active Drug Library.

Which permission should you assign to this user?

a) Manage Finalized Drug Libraries

b) Manage Worksheets

c) View Drug Libraries

2. A biomedical technician logs in to HMSS to verify which infusers have successfully received the latest Drug Library updates.

Which permission would this user require to complete his task?

a) Library Transfer

b) Manage Finalized Drug Libraries

b) Medication Import

c) Software Update

3. The Pharmacy Director wants to make the latest hospital formulary changes available to the Library Creation Team. A revised list of medications needs to be uploaded to HMSS.

Which permission would this user require to complete his task?

a) Library Transfer

b) Manage Worksheets

c) Medication Import

Answers: 1. b), 2. a), 3. c)

2-3 Network Architecture and Communications

Who: IT, Device Tracking and Maintenance Teams	**What:** Networks and data communication

Infusers communicate with Hospira MedNet® Software (HMSS) via the network and send data to the server. The network configuration and specific implementation of HMSS will influence how these communications are handled.

The IT Team and the Device Tracking and Maintenance Team must be aware of how the infusers communicate with the system.

Upon completion of this section, the user will be able to:

- Describe three types of information that infusers transmit to the server
- Differentiate between the network architectures supported by HMSS
- Summarize the communication protocols used by the system

Overview of information flow

HMSS enables bidirectional communication between infusers and the server, over a wired or wireless network.

Data communicated between the server and the infusers are stored in a database. Microsoft® SQL Server, a Structured Query Language (SQL) client/server relational database management system, organizes the data and maintains the structure of database files.

Data collected from the infusers may be used to generate reports about infuser usage.

Infuser log data

Infusers maintain a log of all events. Event logs are stored locally (on the infuser), and when the infuser is connected to the network, the data are communicated back to the server.

Data contained in event logs can be divided into three categories:

Events

Programming: Sequence of steps used to configure an infusion, ending with pressing the Start key on the infuser.

Occurrences at the infuser that are deemed worthy of reporting include Drug Library and software downloads, infuser **programming** keystrokes, events, alarms, warnings, and any other infuser status messages. Event logs on infusers are stored on a first-in-first-out (FIFO) basis. Depending on usage level, single-channel infusers can store up to six months of data, while triple-channel infusers can store up to two months of data.

- ***Example:*** When the infuser is powered down, data relating to the power shutdown are stored with the date and time of the event.

Alerts

Events at the infuser that require user input, such as a “yes/no” or editing the infuser program to remain within recommended dosing limits.

- ***Example:*** While programming an infuser, the clinician must explicitly answer “yes or no” to override a medication dose limit.

Alarms

Alarms remain active until someone responds or acknowledges the alarm at the infuser.

- ***Example:*** During an infusion, a blockage (occlusion) develops in the line that is delivering medication to the patient. The clinician must verify and resolve the problem, then turn the alarm off.

Implementation and network architecture

Several implementation options are available for HMSS. Each institution's infrastructure will dictate which network architecture is chosen.

Core Package Implementations

These implementations are used for hospitals with limited or no local area network (LAN) Ethernet infrastructure. The infusers are not in constant communication with the server. They operate independently and store log files internally. When physically connected to the server, event logs and Drug Libraries may be transferred between the infuser and the server.

Extended Implementations

These implementations are used for hospitals with traditional or wireless LAN Ethernet infrastructure. Infusers are capable of constant communication with the server. Whenever an infuser is online, event logs and Drug Libraries may be transferred between the infuser and the server. Communication with the server can be through standard network cables or wireless access points.

Enterprise Implementations

These implementations are used for hospitals with wired or wireless LAN Ethernet access, compatible with a hospital's bar code point-of-care (BPOC) system. Infusers can receive orders from a BPOC device, such as a handheld personal digital assistant (PDA). Hospira MedNet® Software performs 5-Rights* Verification to ensure patient safeguards.

*5-Rights: Right Patient, Right Medication, Right Dose, Right Route, Right Time

Communication protocols

Communications between infusers and the server are driven by hypertext transfer protocol (HTTP) 1.1 POST requests and responses, which are transmitted via the network.

HTTP message structure

The HTTP protocol is a request/response protocol. A client sends a request to a server, and the server sends back a synchronous response.

The HTTP Request and the HTTP Response messages include two sections:

- The “header” field is included in any request or response whose “body” section is not empty. The header includes error-checking data customized according to the message body and the transfer protocol.
- The “body” field contains a single extensible markup language (XML) document fragment. The body embeds the request, response, or event data as well-formed “text/xml.”

Error checking

The HTTP request header contains a cyclical redundancy check (CRC) “checksum” that is used to detect data transmission errors.

- The sender uses an algorithm to compute the CRC, based on the contents of the “body” section (CCITTRev8408CRC method). The CRC is appended to the header before the message is transmitted.
- The recipient recomputes the CRC to confirm that no changes occurred during transit.
- If the CRC computed from the message does not match the one included in the CRC header field, the recipient rejects the message by returning a status code of “406” (Not Acceptable) in the synchronous HTTP response.

Security

The secure sockets layer (SSL) protocol is used to encrypt client/server communications. When a communication is initiated, the infuser and server exchange security certificates and authenticate the connection.

Note:

PDAs, which may be used with the N5 implementation of HMSS, do not support client-side certificates. Only client-side validation of the server certificate will be supported for communications between a PDA and the server.

Data transfer rates

The Hospira MedNet® system supports both wired and wireless network configurations. The data transfer speed of the infuser will vary depending on how it is connected.

Connection	**Protocol**	**Speed** (megabytes/second)
Wired	TCP/IP	100 or 10 Mb/s (auto-sense mode)
Wireless	TCP/IP over 802.11a,b,g	54,11, 5.5, 2 or 1 Mb/s (auto-sense mode)

Self-assessment

Select the best answer to each question.

1. Where in a message is the cyclic redundancy check information contained?

a) Body
b) External XML file
c) Header
d) Both header and body

2. Which implementation of HMSS is compatible with third-party BPOC systems?

a) L
b) L-enhanced
c) N
d) N5

3. In which implementation(s) of HMSS do infusers routinely run independently of the server?

a) L
b) L-enhanced
c) N
d) N5

4. For a wireless implementation of HMSS, what are the typical data transfer rates?

a) 1, 2, 5.5, or 11 Mb/sec
b) 10 or 100 Mb/sec
c) 55 or 100 Mb/sec
d) 10 Gb/sec

5. An occlusion in a patient's IV line would be recorded in the infuser's log as:

a) Alarm
b) Alert
c) Event
d) Warning

Answers: 1. c); 2. d); 3. a), b); 4. a); 5. a).

2-4 Database Administration

Who: IT Team	**What:** Database types, backup and restore procedures

Hospira MedNet® Software Suite (HMSS) uses a set of relational databases, which are critical to the functioning of the system. The IT Team is responsible for maintaining the integrity of these databases.

Upon completion of this module, the user will be able to:

- Name the HMSS user databases and describe the types of data contained in each
- List the system and user databases that should be backed up regularly
- Backup databases using the SQL Server Enterprise Manager

Overview of HMSS database types

HMSS enables communication between infusers and the server. Data transmitted between the server and the infusers are stored in a database. Microsoft® SQL Server, a Structured Query Language (SQL) client/server relational database management system, organizes the data and catalogs the database files.

The SQL Server maintains multiple system and user databases. HMSS employs two distinct user databases, which are specific for the Hospira MedNet® and the Hospira MedNet® Meds™ software applications.

Database	Name	Description
Master (SQL)	Master	• Default Microsoft® SQL Server database • Contains information about all the other databases on the SQL Server, including login permissions
HMSS	HMSS_5x	• Main user database for Hospira MedNet® Software • Contains information related to the server and hospital-defined configurations • Captures infuser event data
Meds	MEDS_5x	• User database for Hospira MedNet® Meds™ Software • Contains Drug Library worksheets

Recommended database practices

Backup copies of the key HMSS databases should be created and stored in a location protected from server failures. If the server running the SQL Server fails, or if a database becomes corrupted, the backup copy can be used to restore the database.

Successful backup and restore operations require planning and preparation.

Hospira recommends the following practices as guidelines. These practices are not intended to replace any institutional policies or procedures that are already in place.

Backup schedule

Perform a backup of the master, HMSS (HMSS_5x) and Meds (MEDS_5x) databases on a regular basis. It is strongly recommended that the backup be performed on **all databases at once.**

Consider implementing an automatic backup schedule. Hospira recommends performing a full backup once a week, with incremental backups in-between.

Backup device

Configure the backup tape drive, disk, or other device before initiating a backup. For instructions on setting up a backup device to work with SQL Server, refer to the SQL Server documentation.

Note: Backups may contain several gigabytes of data.

Backup repository

Maintain in-house backups in a last-in-first-out (LIFO) type of repository, with a minimum of three generations of backups for each database type. Data may be shipped off-site for long-term archiving.

Note: In a clinical environment, it is sometimes necessary to keep data for up to seven years. The required duration varies according to the type of information stored. Consult the institution's legal department for specific recommendations and policies.

Restore procedure

Database restore procedures should only be performed in extreme circumstances, such as hardware failure or database corruption.

Caution

The restore process is complex and may require assistance from Hospira.

For assistance, please call:
Hospira Technical Service Operations at 1-800-241-4002, Option 4

Note:

On average, 1000 pumps will generate 3.0 – 3.5GB of data per month.

Database security

Database security settings—login IDs, users, roles, and permissions—ensure that only authorized users can view data or execute procedures or administrative functions. Specific access levels may be defined for each user account:

- Login IDs control access to the SQL Server
- User IDs, associated with the Login ID, control access to different databases
- Roles define a group of users (e.g., by job function) and can be associated with permissions
- Permissions linked to a User ID or Role control which procedures can be performed

This system of security IDs identifies users and provides access only to authorized functions.

HMSS contains a set of default IDs, which are associated with fixed server and database roles and permissions. Additional database user profiles may be created. Keep a record of the permissions and roles associated with any nonstandard users.

Backing up a database

The SQL system database (master) and the 2 user databases (HMSSV5, MEDS_5 should be backed up on a regular basis. Additional system databases do not require backup.

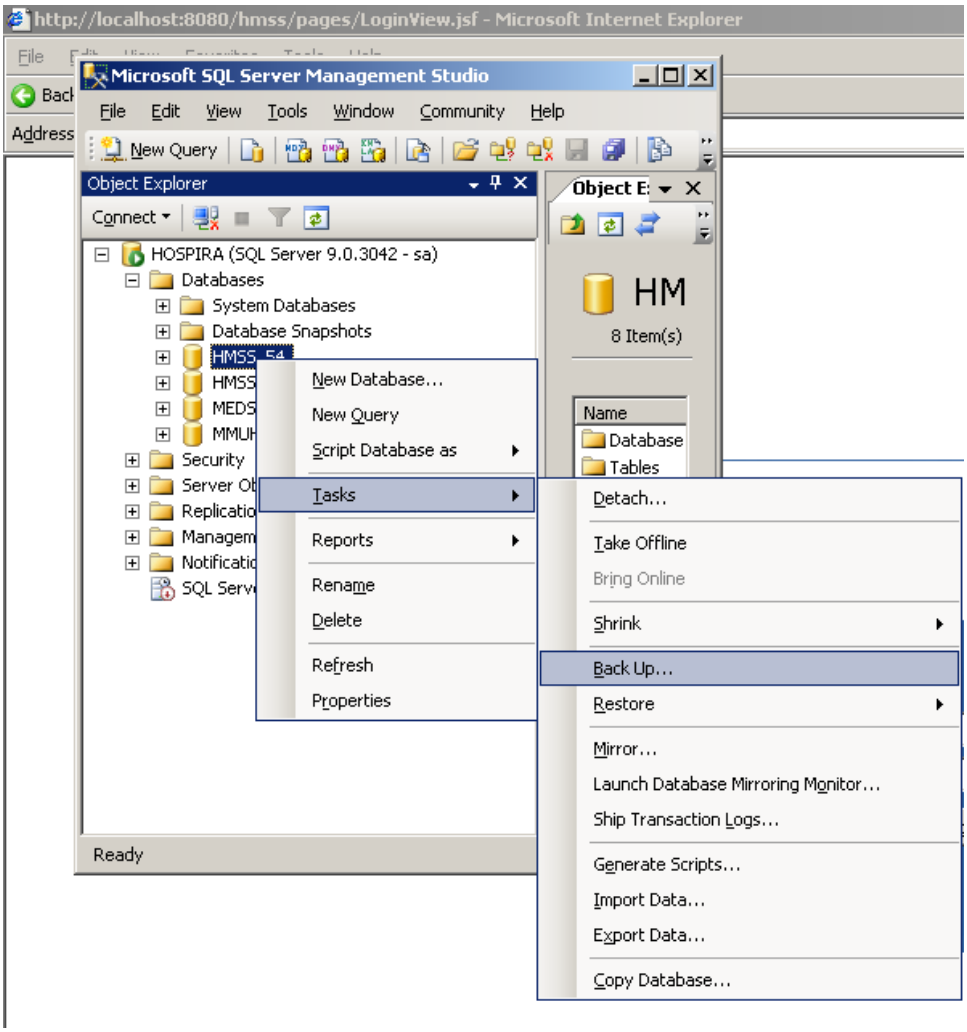
Database backups are initiated from the SQL Server Enterprise Manager interface.

Note: This is one method of performing a backup. If your organization has a SQL agent or other off-the-shelf backup solution, use it according to your best practices. This method is shown for illustration and for those organizations that may not have a set SQL backup methodology.

Opening the SQL Server Enterprise Manager Console

To start the SQL Server Enterprise Manager on the HMSS server:

1. Open the program from the Windows Start Menu.
   Start > **All Programs** > **Microsoft SQL Server 2005**> **Microsoft SQL Server Management Studio**
2. Expand the Console Root folder to reach the management area.
   SQL Server Group > **Databases**

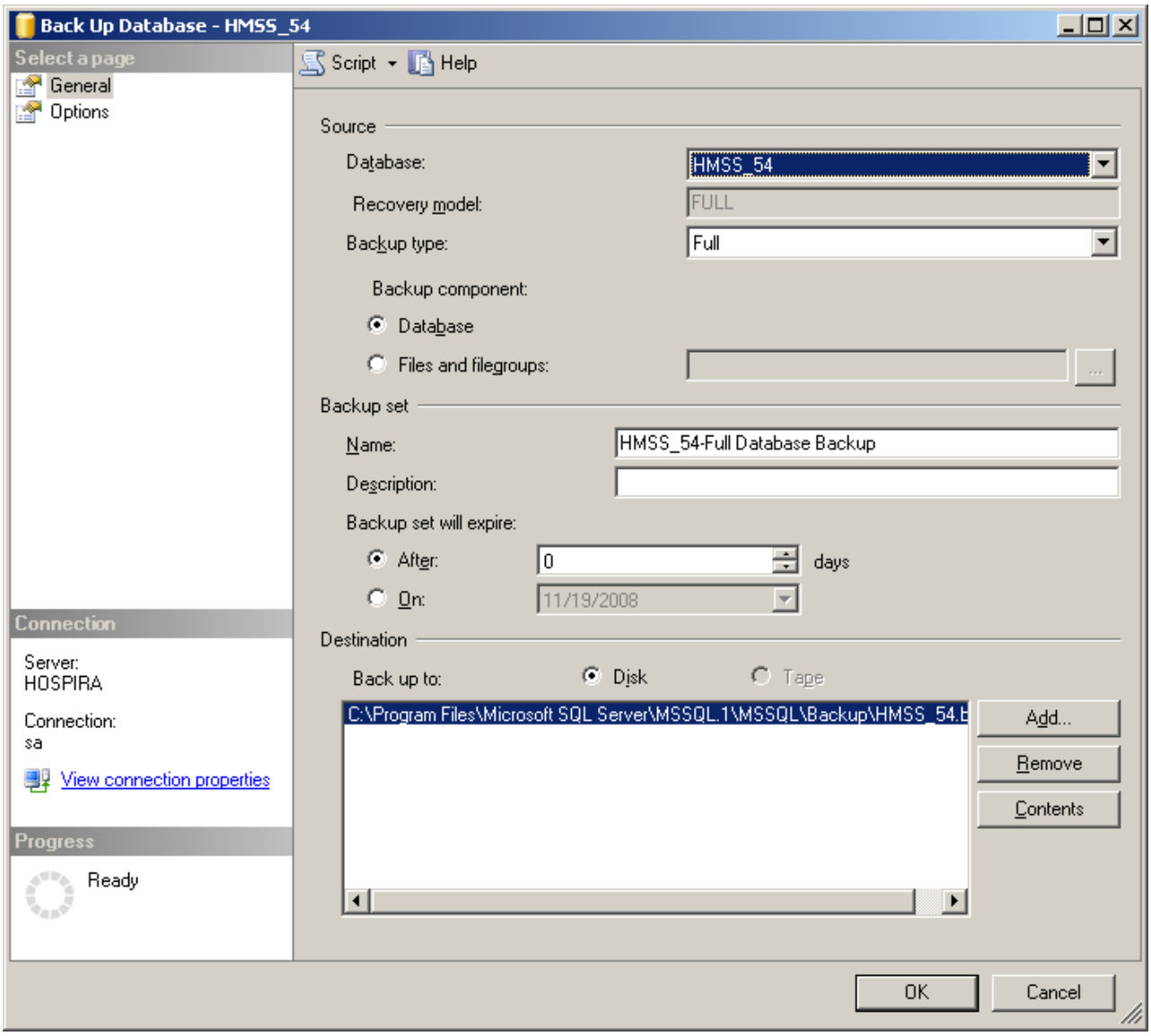


3. Right-click **Database (HMSS_54 is default)** and then select **Tasks** from the pop-up menu and then **Back Up**.

Configuring the backup

Enter the desired settings in the SQL Server Backup dialog box:

1. Select the desired database (master, HMSS54, HMSS55, or MEDS_50) from the **database drop-down list.**



2. Select **Backup Type**.
3. Select the radio button for **Database.**
4. Give the Backup set and **Name** and **Description**.
5. Set Backup set expire date (optional).

6. Click the **Options** Page on the left navigation pane.
7. Select **Overwrite** options.
8. Select **Verify backup upon completion** (optional).
9. To begin the backup operation, click **OK** twice.

When the backup is complete, a dialog box will confirm that the operation was successful.

Click **OK** and close the **Management Studio.**

Types of Backups

- **Database–full:** creates a full copy of the database.
- **Database–differential**: copies only pages modified since the last backup.
- **Transaction log**: copies the log files for the database.
- **File and file group:** copies a selected portion of the database.
- Typically, the backup would be made to a removable tape or disk.

Restoring a database

A database may need to be restored from backups if there is a hardware failure or if the database becomes corrupted. The restore process is complex and should only be performed in extreme circumstances.

Restoring a database from a backup, or moving it from one SQL Server to another, may create a mismatch in the security identification numbers (SIDs). If master database login IDs and database user IDs are incorrect, users will be unable to log in to the application.

Note: Before attempting a restore, ensure there is a record of the default permissions and any nonstandard user roles and permissions that may have been created.

Caution

The procedure described in this training is for reference purposes only.

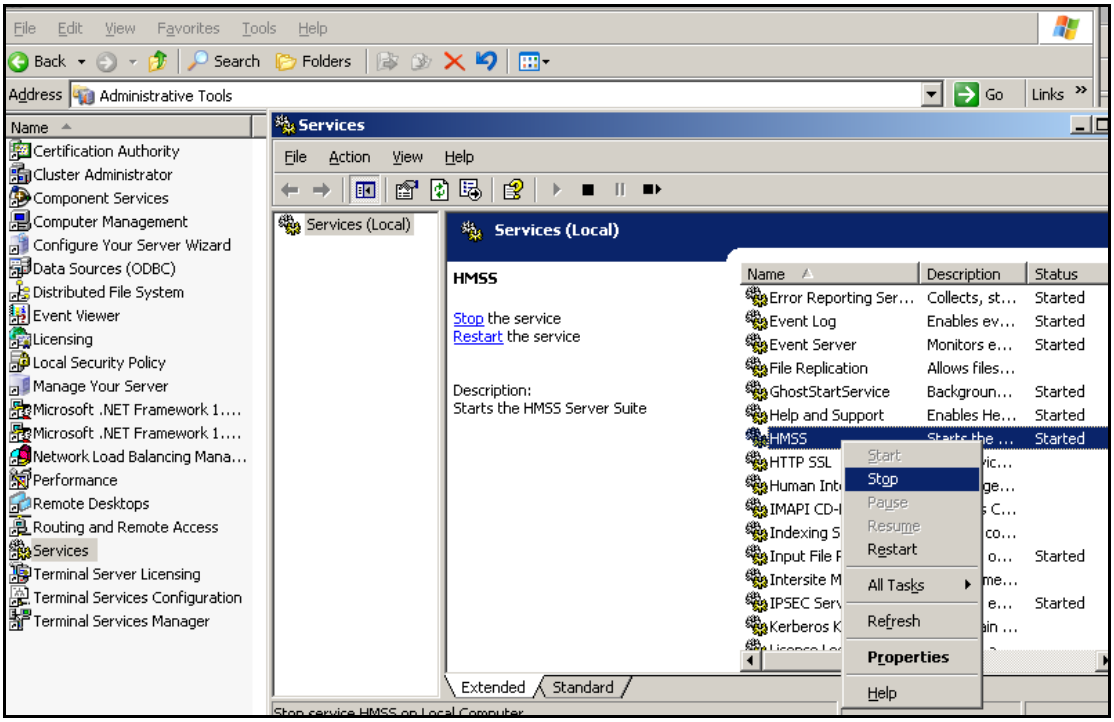
It is recommended that you contact Hospira before attempting to restore a database. For assistance, please call the Hospira Technical Service Operations at 1-800-241-4002, Option 4.

Stopping HMSS service

Before beginning the restore operation for HMSS and Meds (HMSS_5x and MEDS_5x) databases, the corresponding HMSS service running on the SQL Server must first be stopped.

To stop the HMSS service:

1. Open the **Windows Control Panel** or **Start Menu.**
2. Double-click on **Administrative Tools.**
3. Double-click on **Services.**



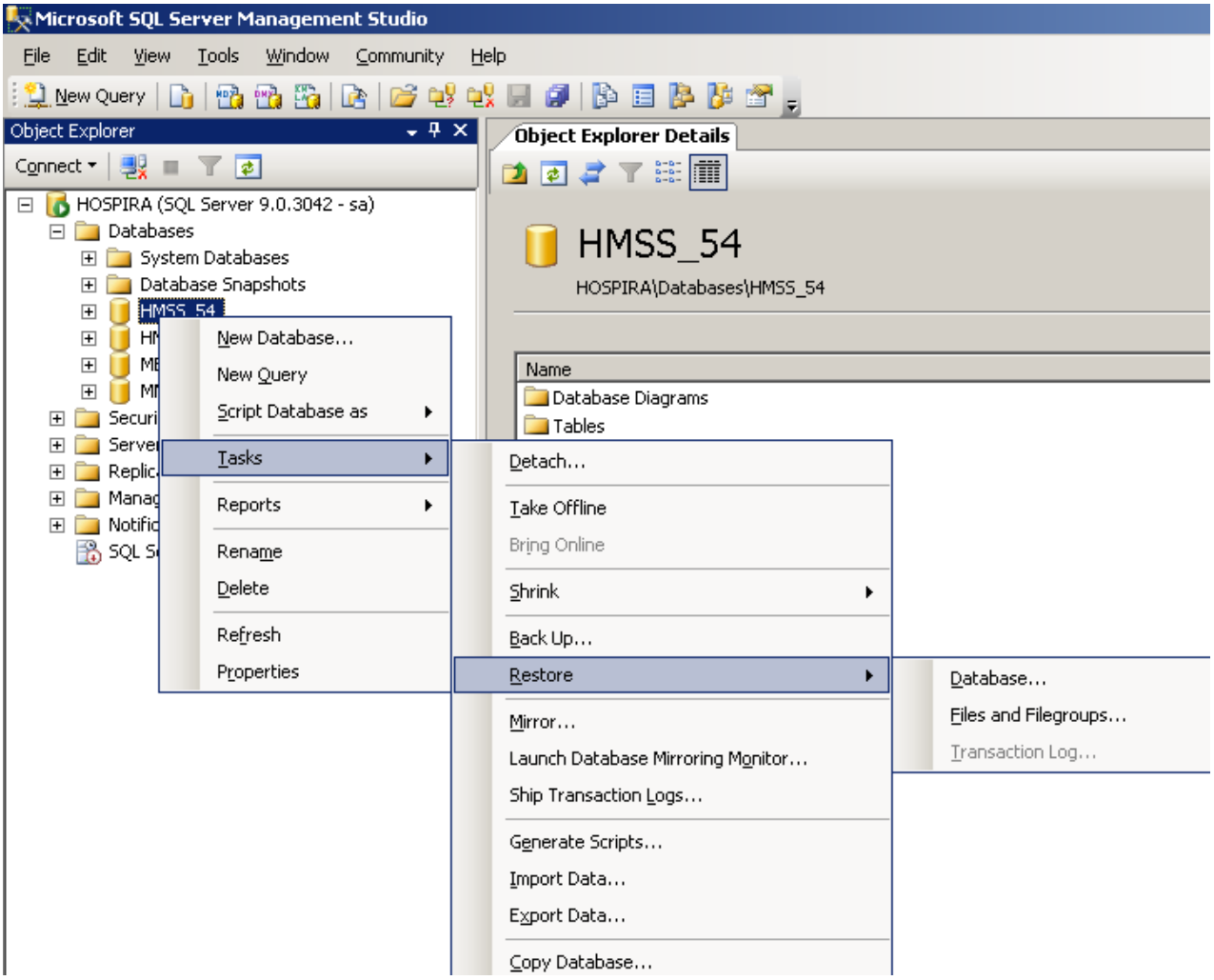
4. Scroll down to locate the HMSS service.
5. Right-click on the service and choose **Stop**.

Initiating a restore operation

Database restore operations are initiated from the SQL Server Enterprise Manager interface.

To start the SQL Server Enterprise Manager on the HMSS server:

1. Open the program from the Windows Start Menu.
   Start > **All Programs** > **Microsoft SQL Server 2005** > **SQL Server Management Studio**
2. Expand the Console Root folder to reach the database area.
   YourServerName > **Databases**

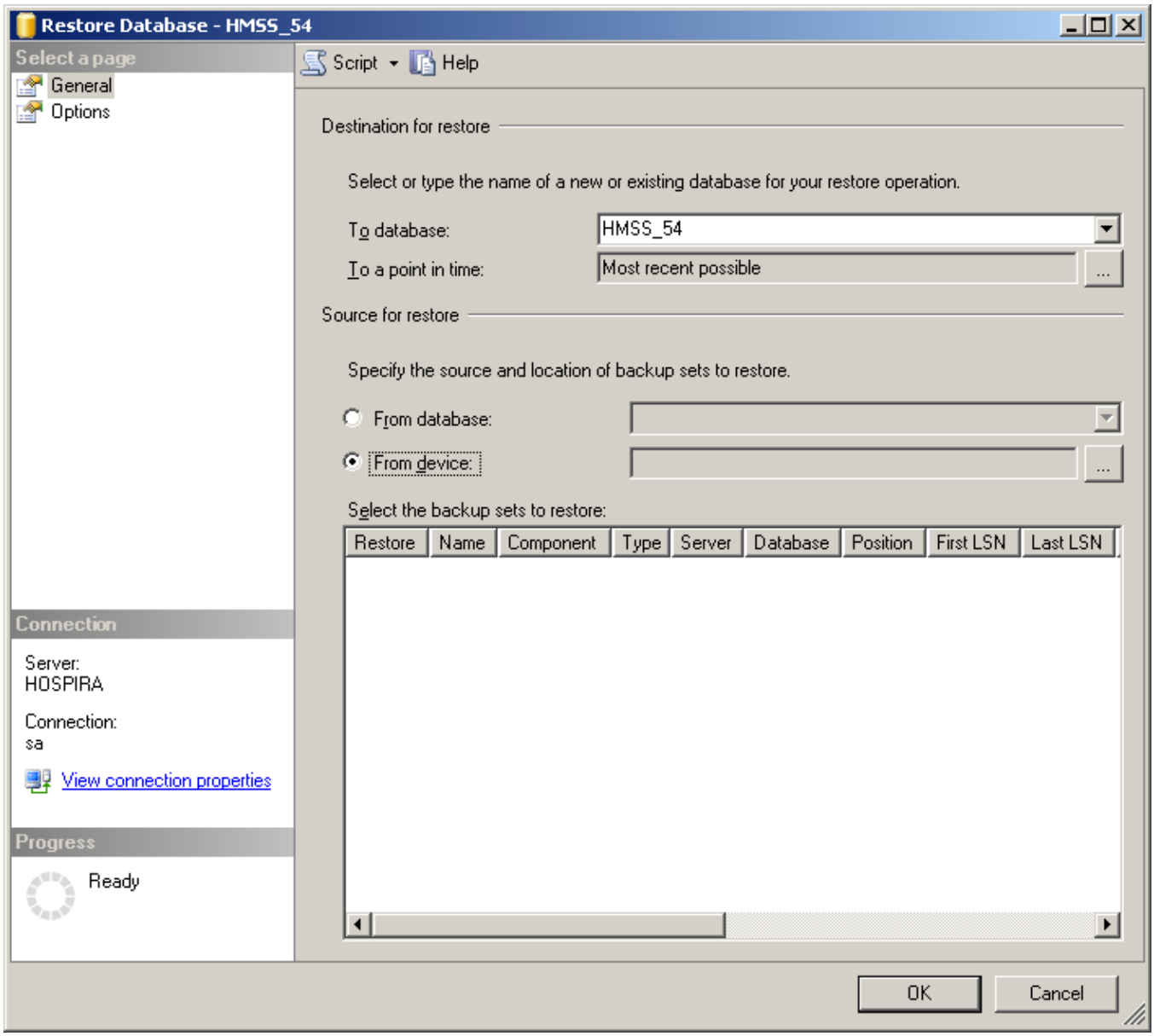


3. Right-click on the name of the database to be restored.
4. Select **Tasks** > **Restore** > **Database** from the pop-up menu.

Configuring the restore options

Enter the desired settings in the Restore Database dialog box:

1. Select the desired database (master, HMSS_5x or MEDS_5x) from the **database drop-down list.**
2. Click the **From Device** radio button.



3. Select the **device** from which to restore.
   - If the device is not listed, click **Add** to specify a file or device to use.
4. Click **Contents** to verify the details of the backup set.

5. Specify a restore option:
   - **Database–complete:** restores a full copy of the database.
   - **Database–differential:** restores only pages modified since the last backup.
   - **Transaction log**: restores the log files for the database.
   - **File and file group:** restores a selected portion of the database.
6. To begin the restore process, click the checkbox next to the backup set you just specified and then click **OK**.

Note: The restore could take much longer than the backup.

When the restore operation is complete, a dialog box will confirm that the operation was successful. Click **OK** and close the **Management Studio.**

Testing the restored database

The restored database should be verified to confirm proper operation.

HMSS must be restarted before the application can be tested. To start the service:

1. Open the **Windows Control Panel** or **Start Menu.**
2. Double-click on **Administrative Tools.**
3. Double-click on **Services.**
4. Scroll down to locate the **HMSS service**.
5. Right-click on the service and choose **Start**.

When the HMSS is running, log in to the application and perform a test sequence on the corresponding database to confirm proper operation.

Self-assessment

Select the best answer to each question.

1. What is the name of the database that contains the Drug Libraries?

a) HMSS_54
b) Master
c) MEDS_54

2. What is the recommended database backup level?

a) Database–complete
b) Database–differential
c) File and file group
d) Transaction log

3. You must stop the SQL Service every time you backup a database.

a) True
b) False

4. Database backup and restore procedures for HMSS user databases are initiated in which environment?

a) Administrative tools, on the Windows Start Menu
b) Hospira MedNet® Software
c) SQL Server Enterprise Manager
d) Windows Control Panel

Answers: 1. c); 2. a); 3. b) 4. c)

HMSS IT Training Guide

Module 3. Infuser Maintenance and Management

Device Tracking and Maintenance Team, IT Team, Library Transfer Teams who work with Hospira MedNet® Software (HMSS) and compatible infuser systems require an understanding of the different devices and how they communicate together.

This Module provides an overview of the different infusers and routine care, as well as how HMSS can be used to track infuser inventory and network status, and to locate infusers throughout the hospital.

This Module consists of three sections:

- Infuser Hardware and Maintenance
- Infuser Status and Management
- Access Point Mapping

For training purposes only.

Refer to the detailed instructions Hospira MedNet® User Guides and Infuser System Operating Manuals prior to use.

3-1 Infuser Hardware and Maintenance

Who: Device Tracking and Maintenance, IT, and Library Transfer Teams	**What:** Infuser hardware, connections, and routine maintenance

Infusion pumps, or infusers, are used to control delivery of intravenous (IV) medications and fluids. All users should become familiar with infuser connections and with basic equipment care and maintenance. Upon completion of this section, the user will be able to:

- List infusers that are compatible with HMSS
- Locate the Ethernet connection port on different infuser models
- Describe the appropriate cleaning procedures for an infuser
- Identify three factors that can affect the life of the infuser battery

Hardware overview

Compatible infusers connect to HMSS via a wired or wireless network or can operate as stand-alone infusion pumps. The HMSS is compatible with the Hospira Symbiq®, Plum A+®, and LifeCare PCA® (**patient-controlled analgesia**) infusion systems.

Patient-controlled analgesia (PCA):
Self-administration of analgesics by means of a programmable pump.

Hospira Symbiq® Infuser

The Hospira Symbiq® Infuser is a multipurpose infusion system used to deliver IV medications, fluids and solutions across the general spectrum of clinical care.

The Symbiq® Infuser comes in single-channel and dual-channel models.

Hospira Plum A+® Infuser

The Hospira Plum A+ Infuser is a multipurpose, single-channel infusion system used to deliver IV medications, fluids and solutions across the general spectrum of clinical care.

The Plum A+®3 model combines three Plum A+® general infusion pumps into one unit and supports up to six IV lines.

Hospira LifeCare PCA® Infuser

The Hospira LifeCare PCA® Infuser is a portable infusion pump that allows patients to self-administer analgesic medications on an “as-needed” basis, within programmed limits. It may also be used to infuse pain medications on a continuous basis.

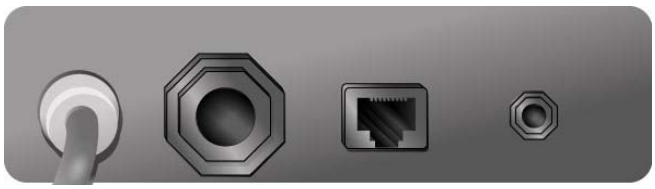
Rear panel hardware controls

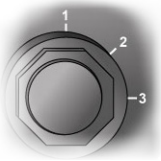
Infusers communicate with the Software via wired or wireless networks, depending on the implementation and infrastructure of the system. For wired communications, the network cable must be plugged into the infuser's Ethernet port. Although each infuser model differs, the port is always located on the rear panel of the device.

Symbiq®

Plum A+®

LifeCare PCA®



Legend	
Ethernet port Port used for wired connections to hospital LAN. When a network cable is plugged into the port, wireless communications are disabled.	**Lock out control** Toggle switch that disables all front panel keys except the STOP key. Used to prevent inadvertent programming changes.
Nurse call relay connector Jack used to connect the infuser to the nurse call relay system, to provide remote notification of events.	**Volume control knob** Controls the loudness of the audible alerts on the infuser. The 1 o'clock position = maximum volume; 3 o'clock position = minimum volume. 
Ethernet activity indicator lights LEDs show activity on the Ethernet network interface.	**Patient pendant jack** Jack connects the patient pendant to the infuser. The patient presses the pendant's button to deliver a dose of medication (LifeCare PCA® only).
Ground test point Jack used to connect to a circuit tester, to verify whether the outlet is properly grounded.	

Basic infuser maintenance procedures

Each infuser should undergo routine cleaning maintenance.

Refer to the infuser's *System Operation Manual,* and observe all Cautions and Warnings before cleaning or performing maintenance.

Cleaning and sanitizing

Establish a routine weekly schedule for cleaning the infuser case, front panel, and patient pendant (if applicable). Regular cleaning helps to keep the infuser free of contaminants and prevent the spread of infection.

General precautions

NEVER:

- Immerse the infuser in fluids or cleaning solutions
- Spray cleaning solutions toward any opening in the instrument
- Allow cleaning solutions to saturate or enter the air-in-line detectors
- Use abrasive cleaners or cleaning solutions not recommended by Hospira
- Use compounds containing combinations of isopropyl alcohol and dimethyl ammonium chloride
- Use sharp objects such as fingernails, paper clips, or needles to clean the infuser
- Sterilize by heat, steam, ethylene oxide (ETO), or radiation

To clean the infuser:

1. Press the [ON/OFF] key on the front panel to turn the infuser off.
2. Disconnect the infuser from the AC power.
3. Using a lint-free cloth dampened with a recommended cleaning solution or mild nonabrasive soapy water, clean the cassette door and exposed surfaces of the infuser.
4. Using a small nonabrasive brush, clean the housing and subsystem chassis components.
5. Using cotton-tipped swabs saturated with cleaning solution, clean the elements behind the cassette door, including the cassette receptacle.

To facilitate the cleaning of elements located behind the cassette door, unlatch the door from its handle. Tilt the device back, open the cassette door, and press the door release tab to open the door fully.

Recommended cleaning solutions and mixtures	
Cleaning solution*	**Manufacturer**
Coverage™ HBV	Steris Corporation (Division of Calgon Vestal Laboratories)
Formula C™	Diversey Corporation
Dispatch®	Caltech Industries
Precise®	Caltech Industries
Household bleach	Various **Do not exceed** 1 part bleach in 10 parts water
Manu-Klenz®	Calgon Vestal Laboratories
Sporicidin®	Sporicidin International
Super Edisonite®	S.M. Edison Co.

*Prepare cleaning solutions according to manufacturer recommendations. The disinfecting properties of cleaning solutions vary; consult the manufacturer for specific information.

Battery maintenance

The infuser is battery powered for emergency backup and temporary portable operation. Using wireless communications will drain the battery faster than wired communications. Depending on the infuser model and pump rate, a fully charged, new battery yields 2 to 3 hours of continuous operation before sounding a Low Battery Alarm (approximately 30 minutes prior to shutdown).

Warning

The infuser **cannot** communicate via the wireless network if the Low Battery Alarm has sounded.

The battery charges whenever the infuser is connected to AC (mains) power. If the infuser is switched OFF, the battery takes from 6 to 16 hours to recharge, depending on the infuser model. More time is required if the infuser is ON during charging.

Before using a new infuser for the first time, fully charge the battery. To maximize battery charge and to prolong battery life:

- Connect the infuser to AC power whenever possible.
- At least once every 6 months, operate on battery power for 3 continuous hours and then charge for a minimum of 6 hours.

Generally, the more often the battery is partially discharged and recharged, the sooner it will need to be replaced. A battery that cannot accept a full charge will display a Battery Fault message on the infuser.

General precautions for infuser batteries

- Charge the infuser for 6 to 16 hours prior to initial use.
- Do not operate the infuser with the battery removed.
- If the Low Battery Alarm sounds, connect to AC power immediately.
- Only a qualified biomedical technician should replace the infuser battery.
- Disconnect the infuser from the AC power before opening the battery door.

Infuser storage

To prolong the life of the infuser, observe the following storage precautions:

- Avoid excessive heat, cold, and humidity
- Connect the infuser to AC (main) power
- Switch the infuser off using the [ON/OFF] key

Service

All servicing or adjustments to the infuser should be referred to qualified technical personnel. A technical service manual may be ordered from your local Hospira sales office.

Note

For detailed information on infuser hardware, features, and maintenance, refer to the *System Operating Manual* for each model of infuser.

Self-assessment

Which procedures should be part of your “best practices” for the routine maintenance of infusers?

Indicate your answers by checking “Yes” or “No” in the space provided.

Procedure	Yes	No
1. Disabling wireless communications while charging the battery		
2. Disconnecting from AC power when not in use		
3. Discharging and recharging the battery at least twice a year		
4. Performing the first infusion on AC power, to charge the battery		
5. Removing the cassette door to facilitate cleaning hard-to-reach areas		
6. Scrubbing the housing with a wire brush and abrasive cleaner to remove residual contaminants		
7. Sterilizing with ethylene oxide		
8. Storing the infuser in a cold location		
9. Turning the infuser ON to accelerate battery recharging		
10. Weekly cleaning		

Answers: 1. No; 2.No; 3. Yes; 4. No; 5. Yes; 6. No; 7. No; 8. No; 9. No; 10. Yes.

3-2 Infuser Status and Management

Who: Device Tracking and Maintenance, IT, and Drug Library Transfer Teams	**Why:** Infuser inventory tracking and network statuses

A wired or wireless Ethernet connection allows Hospira MedNet® Software (HMSS) to communicate with infusers located throughout the hospital. An active communications link enables teams to manage infuser inventory, locate the last access point where an infuser communicated (if wireless), transfer Drug Libraries to infusers, and collect infuser alarm and event log data.

Upon completion of this section, users will be able to:

- Check the network status of an infuser
- Add and remove infusers from the inventory list
- Apply search filters to infusers by type and status
- Add or change the inventory information associated with an infuser

Infuser inventory and network status

Hospira MedNet® Software allows users to track inventory, and to locate infusers and monitor their network status. Uses for this information include:

- Physically locating the last access points of wireless infusers that require maintenance
- Managing inventory of active infusers and infusers removed for maintenance or repair
- Checking infuser status before transferring a new Drug Library
- Verifying whether infusers are online and able to transfer **event log** data to HMSS

Event log: Information stored by the infuser and forwarded to the server, pertaining to any occurrence deemed worthy of reporting.

Status definitions

Network status	Definition	Reason
Online	Normal communication between the infuser and HMSS.	The infuser is currently connected to HMSS directly or through the network via either a wired or wireless LAN connection.
Offline	No communication between the infuser and HMSS.	The infuser is not currently connected to HMSS.

Not Shown	The infuser has never communicated with HMSS, or has been manually deleted.	New infuser that has not yet communicated with HMSS. Infuser communicated with HMSS in the past, but has since been manually removed from the database.

Infuser management

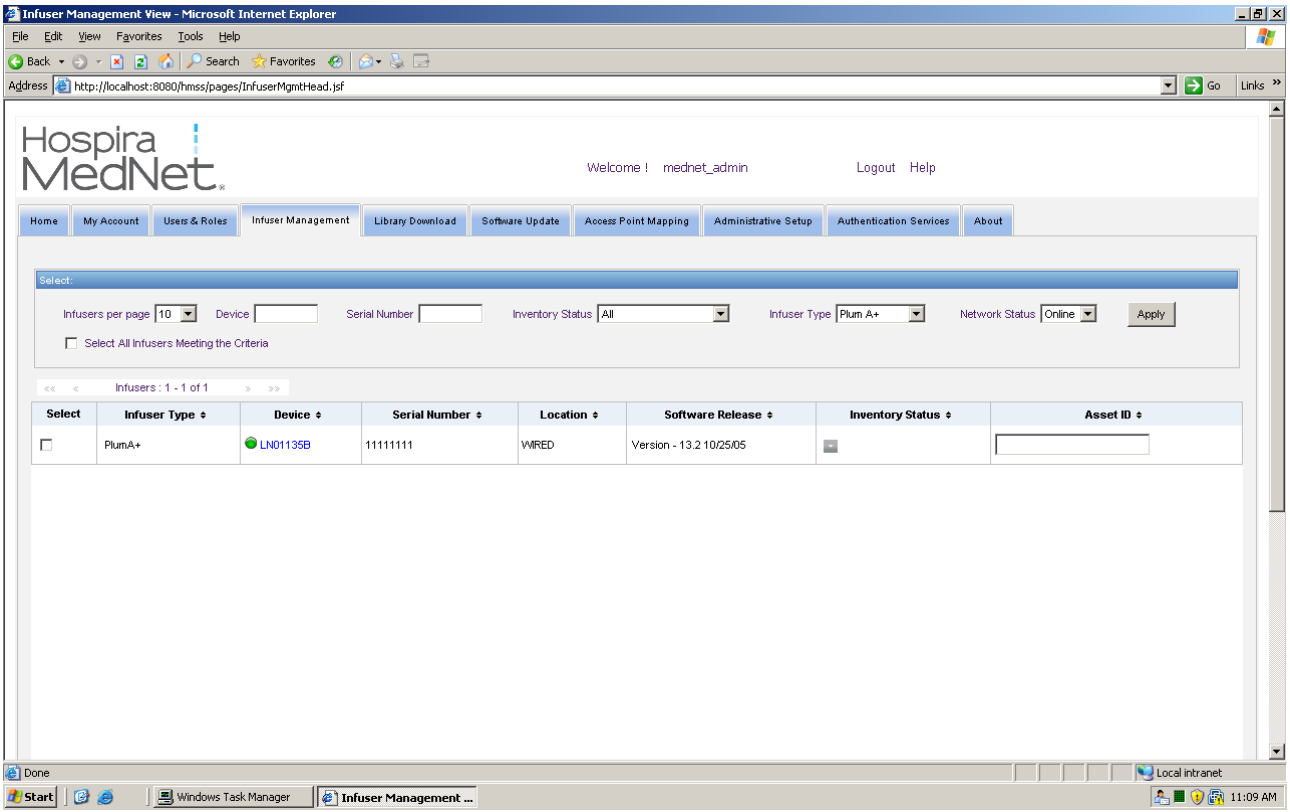
Authorized users access infuser inventory and network status information from the Infuser Management area of Hospira MedNet® Software. The area is only visible to users who have been assigned the appropriate access privileges by the System Administrator.

Note: You must be logged in to Hospira MedNet® Software to manage infusers. For details on how to log in, refer to the *Getting started* section of Module 1.

The Infuser Management area

To access the Infuser Management area, click the **Infuser Management** tab.

The Infuser Management area lists identifying details for all current infusers, along with their respective network and inventory statuses.


Infuser Management View - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://localhost:8080/hmss/pages/InfuserMgmtHead.jsf
Hospira MedNet
Welcome ! mednet_admin Logout Help
Home My Account Users & Roles Infuser Management Library Download Software Update Access Point Mapping Administrative Setup Authentication Services About
Select:
Infusers per page 10 Device Serial Number Inventory Status All Infuser Type Plum A+ Network Status Online Apply
Select All Infusers Meeting the Criteria
Infusers : 1 - 1 of 1
Select Infuser Type Device Serial Number Location Software Release Inventory Status Asset ID
PlumA+ LN01135B 11111111 WIRED Version - 13.2 10/25/05
Done
Local intranet
Start
Windows Task Manager
Infuser Management ...
11:09 AM

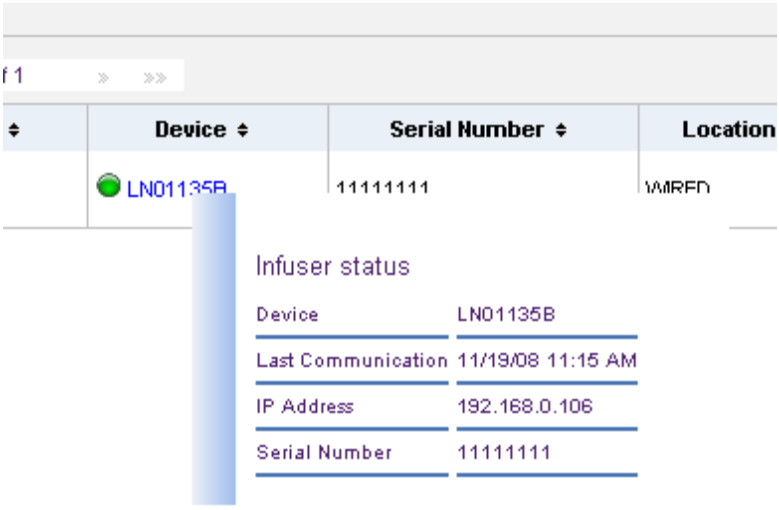
Information contained in the infuser list

Field	Description	Notes
Select	Marks infusers to be deleted from the inventory list. Clicking the Select header selects/deselects all infusers; clicking each check box selects/deselects individual infusers	Used to manually delete infusers that have been removed from the environment
Infuser Type	Type of infuser: • Plum A+® • LifeCare PCA® • Symbiq®	Automatically detected when the infuser reports its status to the server
Device	Unique logical ID assigned to each infuser	Automatically detected when the infuser reports status to the server
Serial Number	Serial number of the infuser	Automatically detected when the infuser reports status to the server. The serial number may be missing if the server has never received a full status message.
Location	Physical location of the current wireless access point or the point where the infuser and network last communicated. (**Note:** Access points can be given a descriptive name in *Access Point Mapping* area of the Software).	The location field may be obsolete if the infuser's Network Status is Offline. The proximate location cannot be traced until the communication link between the infuser and the server is restored.
Software Release	Version of software residing on the infuser.	Applies only to infusers with field-based software upgrade capabilities.
Network Status	Network status is provided by the green/red dot next to infuser	
Inventory Status	Descriptive information about the infuser's inventory status	Choose a value for the status of your infuser. Note: If you have upgraded your former entries and the free text capability will now be contained in the Asset ID column, or the entries will be static and remain in the Inventory Status column.
Asset ID	Free Text field	Use this field to record your organizations asset ID for the device, or other information about the infuser.

Other information available from the Infuser Management Screen

If you click on any infuser on the list, an onscreen display message will pop up and show the following information:

- Device Name
- Last Communication
- IP Address (as of the last reporting of the infuser)
- Serial Number

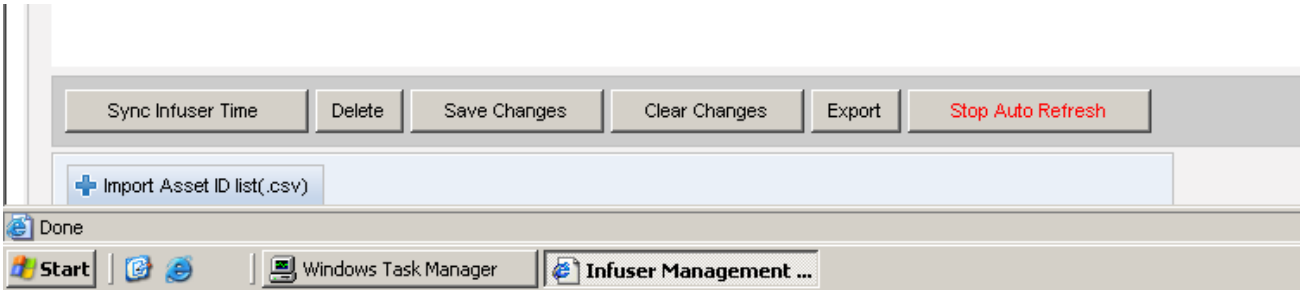


Importing or Exporting Asset IDs

Asset IDs may be imported or exported from within the Infuser Management screen. It may be useful for your organization's inventory or tracking purposes to export this list. Conversely, if you already have an inventory list, you can avoid re-typing this list by performing an import.

To export the Asset ID list:

1. Click on the Export Asset ID's button on the bottom of the Infuser Management screen.



2. Choose the **Save** button from the File Download dialog box.
3. Choose a location for the file
4. Change the name of the file (optional)
5. File will export as a .csv file

Note

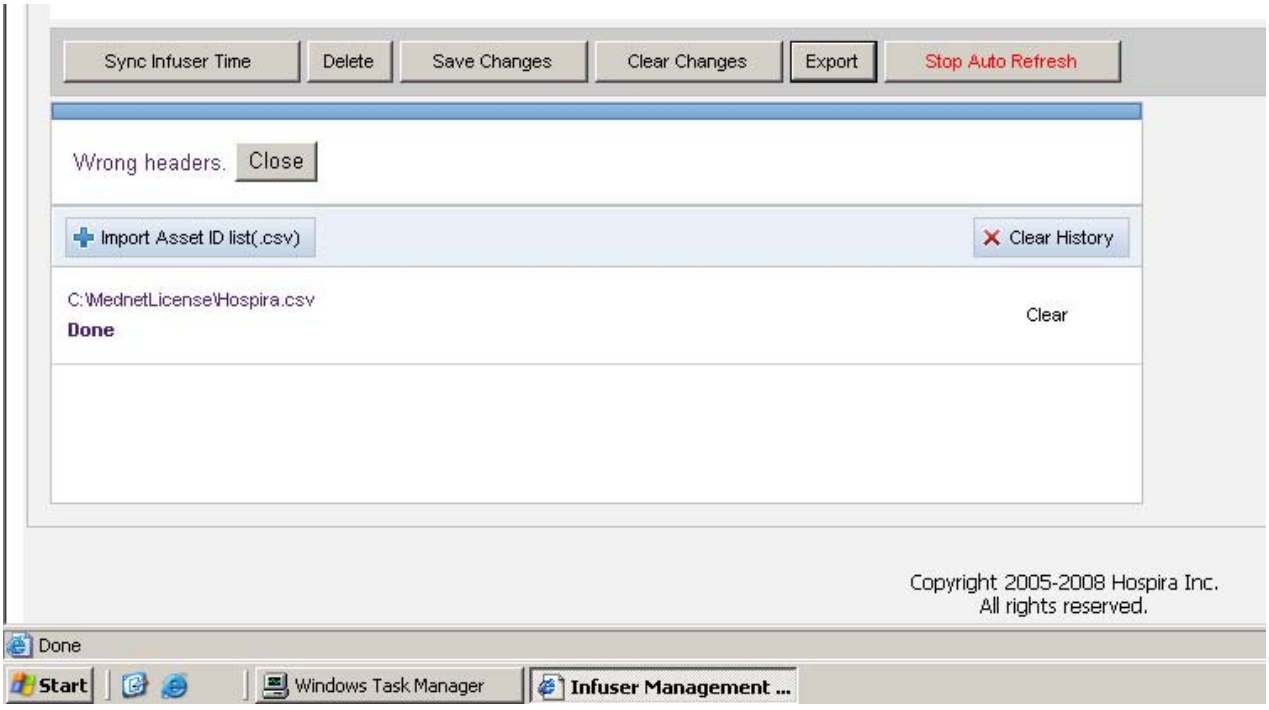
Do not use a double quote (") or a backslash (\) in your device IDs. These characters are not allowed.

To import an Asset ID List

1. Prepare the file to have two header fields: “Serial Number” (and) “Asset ID” list your infusers accordingly under these fields
2. Limit all Asset IDs to a maximum of 25 characters
3. Save the file with a .csv format to a known location
4. On the infuser management screen, click the Import Asset ID list (.csv) button
5. Locate your .csv file, click open
6. Click the “Start Upload” button

Note:

Any errors will be displayed below the Import/Export buttons and will look like the example here:



Note

Do not use a double quote (“) or a backslash (\) in your device ID’s. These characters are not allowed.

Adding an infuser to the list

Every time an infuser is turned on and connected to the network, it sends a full status message to the server. Upon receiving this message, HMSS automatically registers the infuser and adds it to the list.

Clicking **Refresh** on the browser toolbar, pressing F5, or leaving the Infuser Management tab and then returning will refresh the screen to show any new infusers.

Sorting the infuser list

The infuser list may be sorted by Infuser Type, Device, Serial Number, Location, Software Release, or Inventory Status.

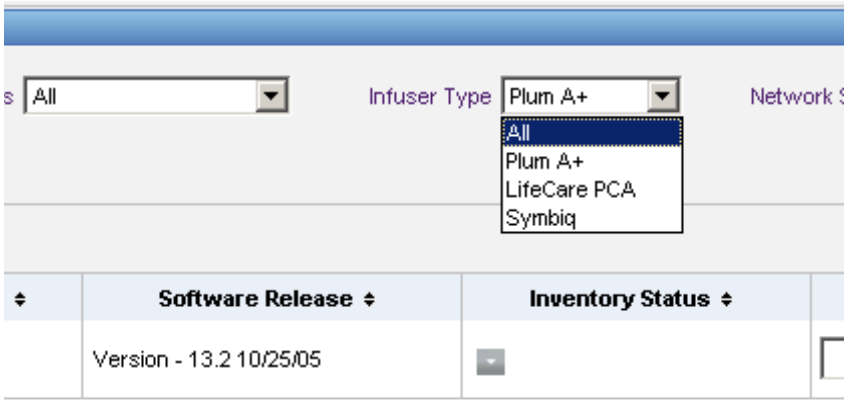
To sort by one of the list fields, click the header in the corresponding column. Click again to reverse the display order.

Applying a filter to the infuser list

The infuser list may be filtered by infuser type, network status, or by a combination of both fields. Only the infusers meeting the selected criteria will be displayed.

Filtering options are located above the list. To apply a filter:

1. Select the desired infuser type from the **Infuser Type** drop-down menu.



2. Select the desired network status from the **Network Status** drop-down menu.
3. Click **Apply**.

The list will display only infusers that match the specified filter(s).

Searching the infuser list

You may search the Infuser List by serial number.

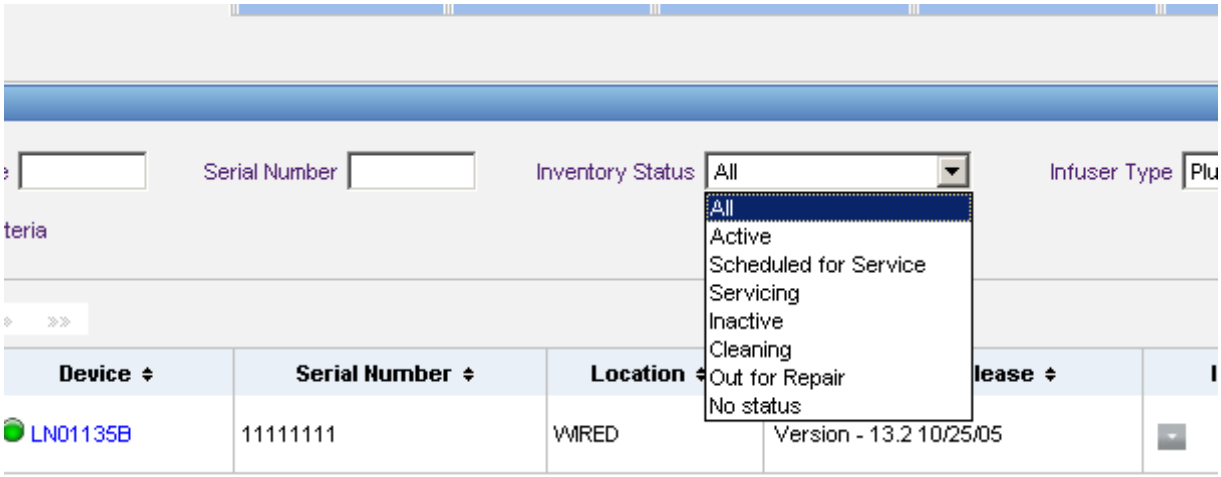
1. Enter the infuser serial number in the “Serial Number” field.
2. Click **Apply.**

Add or changing inventory status details

The Inventory Status is a drop down field that can be used to enter status information about the infuser.

To add or modify the inventory status text for an infuser:

1. Click the drop-down in the Inventory Status row for the infuser in question



2. Click the desired status.

Asset ID Field

Use this field to record your organizations asset ID for the device, or other information about the infuser. If you chose to export your Inventory Status field to Asset ID field you may want to begin to use the Asset ID column for another purpose and to use the new drop-downs for the Infuser Status.

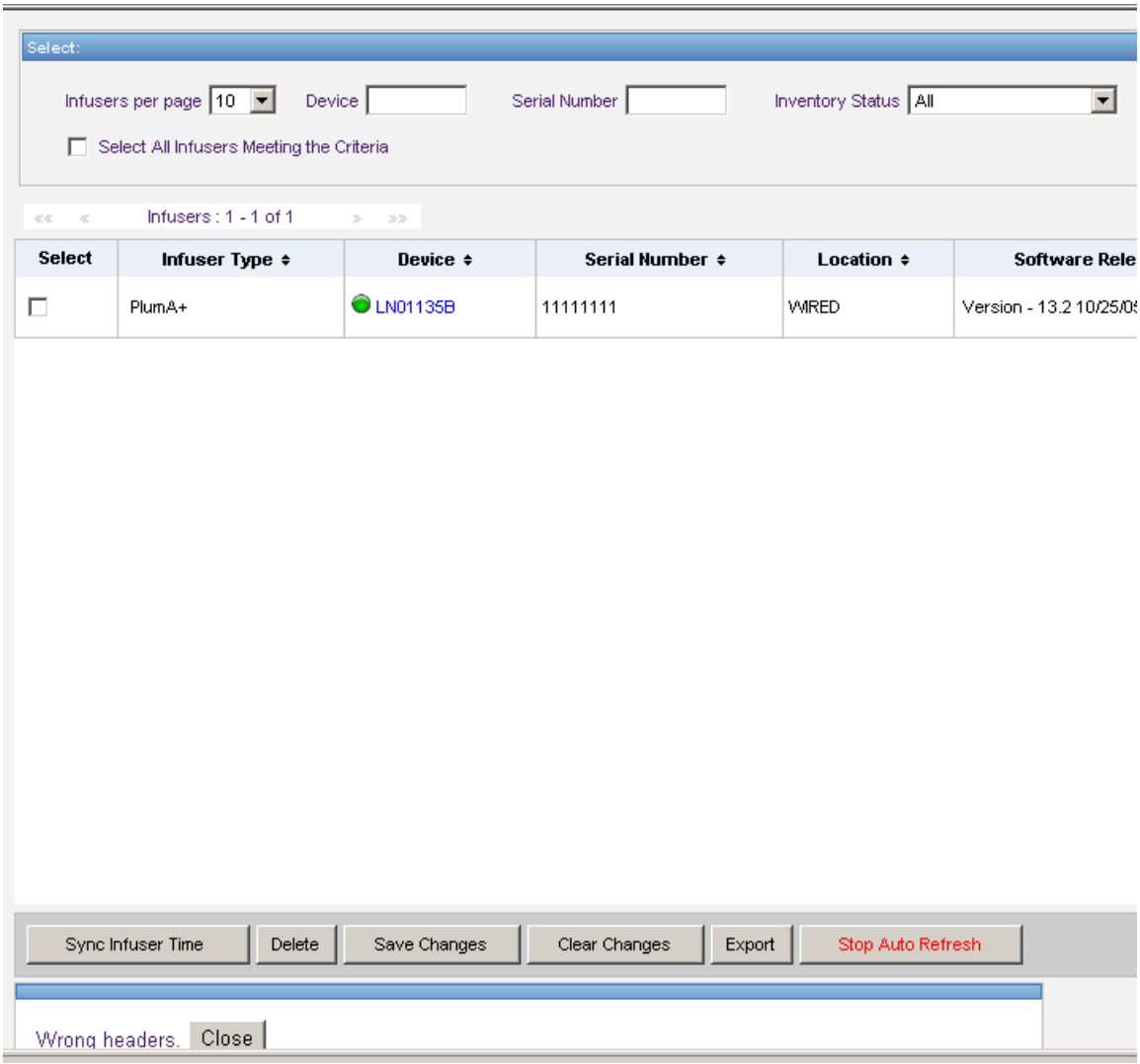
This is a free text field, do not use “(quote) or / (backslash) in this field.

Removing an infuser from the list

The Delete function may be used to manually remove an infuser from the list. For example, the Device Tracking and Maintenance Team may wish to delete an infuser that is out of service (e.g., sent for repair) or no longer in service (e.g., returned to the manufacturer).

The check box in the row for each infuser is used to designate infusers for deletion from the list:

1. To select/deselect individual infusers, click the check boxes, *or*
   to select/deselect all infusers (not commonly used), click the **Select** column header.



2. Click **Delete** button.

When an infuser is removed from the list, it will no longer appear in other Software views.

Note: The deleted infuser will be automatically restored on the infuser list if it is later reconnected to the network, turned on, and submits a status message to the server.

Note: The deleted infuser will be shown on any report that would normally include this infuser.

Note: The deleted infuser will still be in the database for reporting purposes.

Self-assessment

You refer to the infuser list in the Infuser Management view of Hospira MedNet® Software. You notice potential problems with some of the infusers.

For each situation, what infuser status information is most likely displayed in the Infuser Management View? Write the corresponding letter in the space provided.

Situation	Infuser information
1. Infuser was manually deleted from the list	
2. New infuser has not yet been turned on	
3. Last Log Upload outdated	
4. Infuser not used since software upgrade	
5. Defective network connection point	

Answer options
A. Infuser offline
B. Infuser not found
C. Infuser serial number missing

Answers: 1. B; 2. B; 3. A; 4. C; 5. A

3-3 Access Point Mapping

Who: IT and Device Tracking and Maintenance Teams	**What:** Wireless access points and assigning descriptive locations to Access Points

A standard Ethernet network connects infusers to HMSS. Depending on the system purchased, either wired (regular network cable and Ethernet adapter) or wireless (radio link) connections may be used. Hospira MedNet® Software allows authorized users to name and maintain a record of descriptive locations for each wireless access point to allow for easy identification.

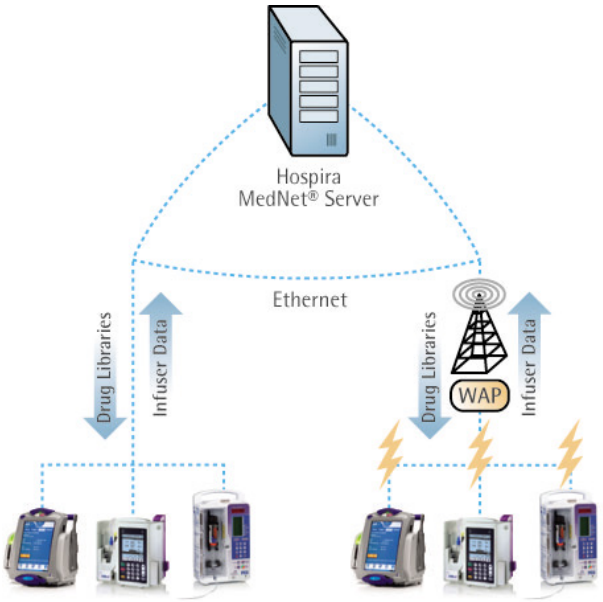
Upon completion of this section, the user will be able to:

- Distinguish between wired network connections and wireless access points listed in the Access Point Mapping area of the Software
- Explain how access points are added and removed from the list
- Add or modify the descriptive location of a wireless access point

HMSS network communications

The Hospira MedNet® System supports both wireless and wired network configurations. Infusers communicate back to a server via a dedicated network connection, or via a wired or wireless local area network (LAN).

The communication option employed will depend upon which type of system is installed. This decision is guided by the infrastructure of each hospital facility.



Access point mapping

The Software allows users to assign a descriptive location to each wireless access point. Providing a meaningful description of the physical location—in addition to the network's numeric **media access control (MAC) address** information—helps users readily identify communication points.

The descriptive locations defined in the Access Point Mapping area will appear in the Library Transfer and Infuser Management areas of the Software, as well as in Asset Tracker reports.

The IT Team and Device Tracking and Maintenance may use this information to facilitate:

- Monitoring system operation, Ethernet network status, and functioning of network adapters and wireless access points
- Locating the last known communication point of wireless devices
- Using information in the Library Transfer and Infuser Management areas of the software to monitor infuser communication and data transfer
- Interpreting Asset Tracker report data

Perhaps the most important and widespread use of the Access Point mapping feature will be the clinical reports. It is very likely that the clinical reporting team will want to use the mapping information to create more granular reports based on floor, area, or facility.

If this feature is used, a resource should be identified to keep this list current inside HMSS. Instructions on importing files are in the next section.

To learn more about:

- **Infuser Management:** Refer to *Infuser Management,* section 3-2.
- **Library Transfer:** Refer to *Drug Library Transfer,* section 4-1.
- **Asset Tracker reports**: Refer to *Reporting* , section 5-1.

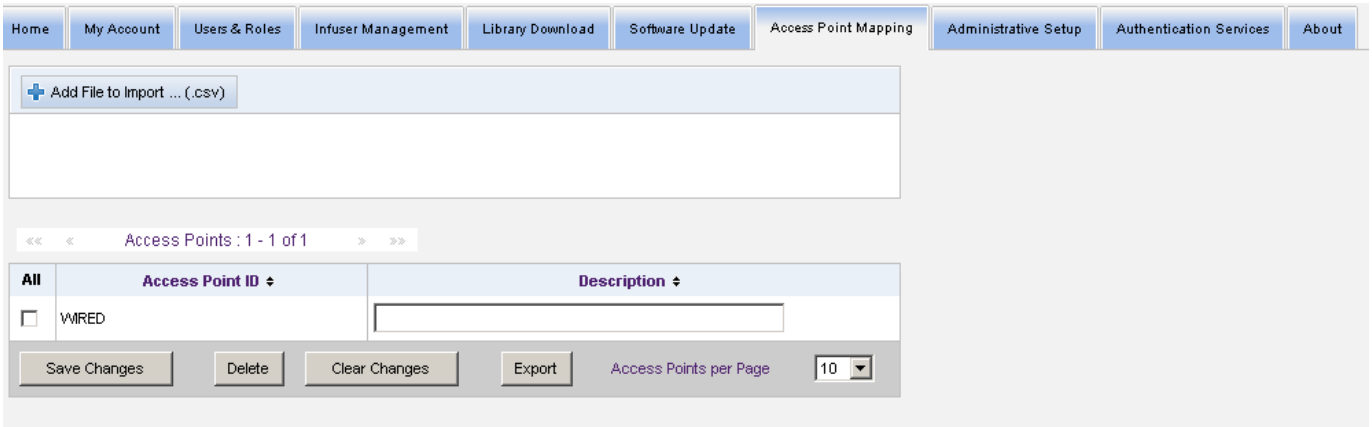
Working with the access point list

Authorized users may view and modify information on communication points in the Access Point Mapping area of Hospira MedNet® Software (HMSS). The area is only visible to users who have been assigned the appropriate access privileges by the System Administrator.

Note: You must be logged in to HMSS to work with access points. For details on how to log in, refer to the *Getting started* section of Module 1.

The Access Point Mapping area

To enter the Access Point Mapping area, click the **Access Point Mapping** tab.



The two fields in the Access Point Mapping area list the addresses of the wireless access points connected to HMSS, along with a user-defined description of their respective locations. This list only shows Access Points that have been used by infusers to communicate with the server.

Field name	Description	Notes
Access Point ID	MAC address of each *wireless* access point	Wired network adapters, which include switches, hubs, and routers, do not display a MAC address. These devices will be listed as WIRED.
Description	Descriptive name for the access point location (0–40 characters)	The System Administrator maintains a list of the physical locations of wireless access points and corresponding MAC addresses. This list can be used to provide a location name.

Note: The Access Point view lists only the network devices that are running properly. Non-functional devices are not shown. Maintenance of Ethernet networks, network adapters, and wireless access points is beyond the scope of the HMSS training.

Adding and removing access points

When an infuser communicates via an access point that is not yet in the HMSS database, the Software automatically adds the Access Point ID to the list.

Clicking **Refresh** on the browser toolbar, pressing F5, or leaving the Infuser Management tab and then returning will refresh the screen to show any changes in devices.

Adding or changing an access point description

The Description text field can be used to enter descriptive information about the location of each wireless access point.

To add or modify the description text for an access point:

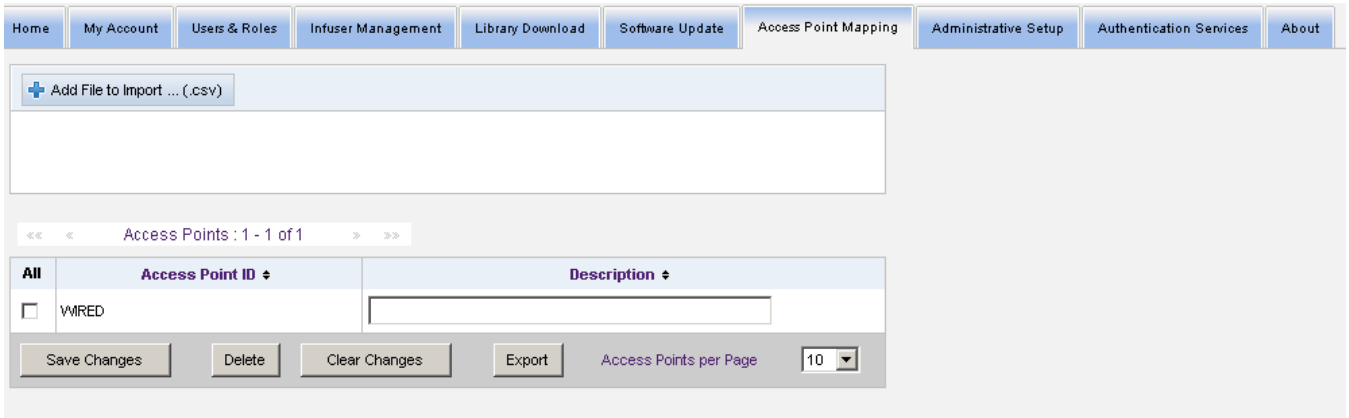
1. Click the corresponding **Description** text box.
2. Type the desired text in the box. The text field may contain 0 to 40 characters and cannot contain a backslash (\) or double quotes (“).

Importing or exporting the access point description

On the inventory status screen you may import or export a list of access points.

To perform an export of the Access Point IDs and Descriptions already in the system do the following:

1. Click the **Export** button



2. Click the **Save** button on the File Download dialog box
3. Choose a location to save the file. Rename if desired.

To import a list of existing Access Point IDs and Descriptions, perform the following:

1. Prepare your list to have two header columns: “AccessPoint ID” (and) “Description.” Do not use the quotes; save the file as a .csv
2. Click the **Add File to Import (.csv)** button

Note

Do not use a double quote (“) or a backslash (\) in your device IDs. These characters are not allowed and will cause an import to fail, or give an error if typed into the list.

Self-assessment

Select the best answer to each question.

1. The Access Point Mapping feature of Hospira MedNet® Software allows you to provide a descriptive location for:

a) Wireless access points

b) Wired network adapters

c) Both

2. The Access Point ID consists of a MAC address for which device(s)?

a) Hub

b) Infuser

c) Router

d) Wireless access point

e) All of the above

3. Select all that apply. The descriptive locations defined in the Access Point Mapping area will appear in which other areas of the Software?

a) Administrative setup

b) Infuser Management

c) Library Transfer

d) Reports (if applicable)

e) Meds

Answers: 1. a); 2. d); 3. b), c), d)

HMSS IT Implementation Training Guide

Module 4. Drug Library Transfer

Hospira MedNet® Software (HMSS) enables users to create Drug Libraries containing "best practice" rules for infused medications. Drug Libraries must be transferred, that is "downloaded" or "pushed," to compatible infusers throughout the hospital before they become available to clinicians at the bedside. IT, Biomedical, Pharmacy, and Clinical users will all benefit from learning about how Drug Library transfers are performed.

The Drug Library download process is the most common major task that each client will have to perform with the Hospira MedNet® System. This task is also a multidisciplinary one, requiring several teams working together to accomplish. For these reasons, this module is extremely important.

This Module provides an overview of the steps involved in a Drug Library transfer and the associated status messages used to monitor the success of Drug Library transfers.

This Module consists of 1 section:

- Performing Drug Library Transfers

For training purposes only.

Refer to the detailed instructions Hospira MedNet® User Guides and Infuser System Operating Manuals prior to use.

4-1 Performing Drug Library Transfers

Who: Library Transfer, Library Creation, Device Tracking and Maintenance, and IT Teams	**What:** Transfer a Finalized Drug Library from the server to individual infusion devices throughout the hospital

Drug Libraries are created with Hospira MedNet® Meds™ Software. Worksheets are stored in the database on the server. Once approved and finalized, Drug Library data must be downloaded to the infusers to be made available to clinicians at the bedside. The process of downloading a Drug Library to the infusers is called Drug Library transfer.

Upon completion of this section, the user will be able to:

- Generate an infuser list, and sort infusers by status and Drug Library version
- Identify infusers that require a new Drug Library
- Initiate and monitor the transfer of a Drug Library from the server to infusers
- Match the steps in a Drug Library transfer with the corresponding status messages
- Understand errors that may arise during transfer and correct common problems

The Drug Library "life cycle"

A brief review of Drug Library creation, transfer, and use will help you to understand the relationships between the data transmitted through the network and the different functional areas of Hospira MedNet® Software (HMSS).

It is important to understand five key facts:

- A **Drug Library Worksheet** ***must*** be finalized as an **active Drug Library** before it can be transferred (downloaded or "pushed") to infusers.
- All infusers of the same type should use the ***same*** version of the Drug Library. This is not a requirement for the infusers or the system to function.
- An Active Drug Library resides on the server, but is ***not*** present on the infusers unless a Drug Library transfer is performed.
- An infuser ***must*** connect to HMSS via the network to receive a new Drug Library.
- A clinician user ***must*** accept the Drug Library transfer to complete the installation of the downloaded Drug Library.

Drug Library Worksheet: Drug Library that can be edited but cannot be sent to infusers until it is finalized.

Active Drug Library: Worksheet that has been finalized and is available to send to infusers.

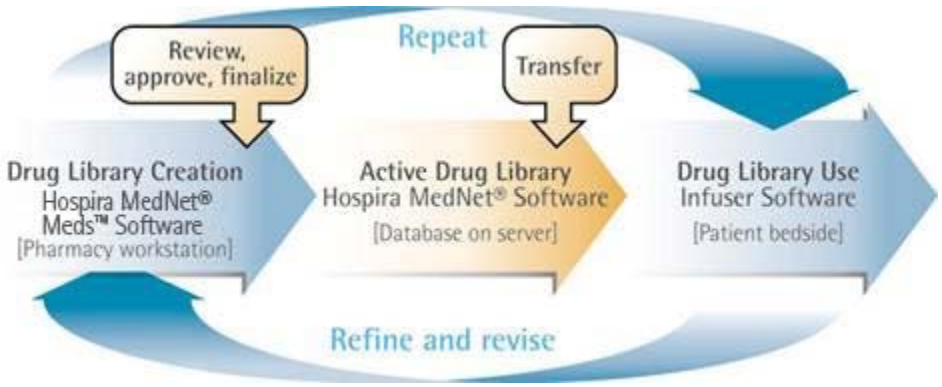


Figure 4-1.1 The life cycle of a Drug Library.

Over time, new medications may be added and changes performed to existing Drug Libraries to meet user needs. New libraries are created and transferred to the infusers as needed. This is usually performed quarterly, or a few times a year. This is not an everyday activity, but you must understand your role in this process in order for it to be effective when it does occur.

Recommendation

A new Drug Library should be validated on a small number of infusers before deploying the library across the entire institution.

Users from the Drug Library Creation and Clinical Teams should check that the settings defined in the Drug Library reflect the needs of clinical end users, and, if needed, make any adjustments or refinements to the Drug Library.

Stages in the Drug Library life cycle

Stage	What?	Who?	How?
Creation	**Creating Library Worksheet** Master infuser settings, CCA settings, and medication entries are defined.	Drug Library Creation Team	Hospira MedNet® Meds™ Software
	Reviewing Drug Library Library undergoes a cycle of review by pharmacists and clinical users.	Drug Library Creation and Clinical Teams	
	Finalizing Drug Library The approved and finalized Drug Library becomes the active library on the server. Any previous versions are archived. *The Drug Library is now ready to be transferred to the infusers.*	Drug Library Creation Team	
Transfer	**Locating and gathering infusers, as needed** In certain situations, this may be required to: • Perform manual wired transfer if the hospital's system does not support networking capabilities • Troubleshoot difficulties with a particular infuser	Device Tracking and Maintenance Team	Hospira MedNet® Software
	Transferring Drug Library to infusers The new Drug Library is downloaded ("pushed") from the server to compatible infusers throughout the hospital. Infusers must be connected to HMSS via the network to receive new Drug Libraries. *The Drug Library is now stored on the infuser and will become available, pending user acceptance.*	Drug Library Transfer and IT Teams	
Use	**Accepting Drug Library** Each infuser prompts the user to accept the new Drug Library. The infuser transfers the Drug Library into active use, and powers down. *The new Drug Library is available for use when the infuser is next turned on.*	Clinical Users (or Drug Library Transfer Team)	Infuser screen
	Using Drug Library At the bedside, the clinician programs the infuser with the desired medication dose and delivery rate, and confirms or modifies the recommendations and specified boundaries defined in the Drug Library.	Clinical Users	

Overview of the Drug Library transfer process

Default Drug Library: A pre-programmed Drug Library embedded in the infuser software; employed until a user-defined Drug Library is installed.

New infusers contain a **default Drug Library**. When a user-defined Drug Library is created and downloaded to an infuser, it replaces the default Drug Library.

At any given point in time, there may be only one Active Drug Library for each infuser type. The Active Drug Library corresponds to a Drug Library Worksheet that has been created and finalized in Hospira MedNet® Meds™ Software.

The Drug Library transfer process is performed using Hospira MedNet® Software.

1. The user selects the infuser type.
   - The Software automatically locates the corresponding Active Drug Library.
2. The user designates which infusers should receive the Drug Library and initiates the download.
   - The Software pushes data from the server to the infusers through the infuser's **connectivity engine.**
3. Infusers that are turned on and connected to HMSS via the network begin receiving the new Drug Library.
   - If an infuser is turned off or disconnected, the transfer is queued until the infuser becomes available. The infuser's Drug Library status is marked as "Requested."
   - If an infuser is in use when a transfer is requested the Drug Library will download in the background and be held on the CE. The transfer will not affect the functioning of the infuser.
4. The infuser receives the Drug Library and stores it in the communications portion of the control module.
   - In HMSS 5.4, the infuser's Drug Library status indicates "Pending" until a clinician accepts the new Drug Library at the infuser.
   - In HMSS 5.5, the infuser's Drug Library status indicates "On Pump" until a clinician accepts the new Drug Library at the infuser.
5. The next time the infuser is powered off, the infuser alerts the clinician that a new Drug Library is available and prompts the clinician to accept the new Drug Library. When the clinician accepts the prompt on the infuser's touch screen, the Drug Library is moved to the command portion of the infuser's control module.

   - In HMSS 5.4, if a clinician does not accept the new Drug Library, the infuser will power down and the "old" Drug Library remains in effect. The infuser issues another prompt to the clinician when next turned off. The transfer status will remain as "Pending" and the old Drug Library will remain in effect until the new Drug Library is accepted and the internal transfer is completed.

Connectivity engine (CE): Component of the infuser that controls communication between the network and the infuser.

- In HMSS 5.4, the average loading time typically ranges from 5 to 10 minutes; in some situations, it may take up to an hour. The infuser's Drug Library status is marked as "Pending" while the Drug Library transfers from the Connectivity Engine to the Command Module.

- In HMSS 5.5, if a clinician does not accept the new Drug Library, the infuser will power down and the "old" Drug Library remains in effect. The infuser issues another prompt to the clinician when next turned off. The transfer status will remain as "On Pump" and the old Drug Library will remain in effect until the new Drug Library is accepted and the internal transfer is completed.

- In HMSS 5.5, the average loading time typically ranges from 5 to 10 minutes; in some situations, it may take up to an hour. The infuser's Drug Library status is marked as "On Pump" while the Drug Library transfers from the Connectivity Engine to the Command Module.

6. An on-screen message on the infuser indicates that loading is in progress.
   - The infuser's Drug Library status is marked as "Complete" and the infuser shuts off automatically.

7. The next time a user turns the infuser on, the new Drug Library is fully installed and available for use.

Performing a Drug Library transfer

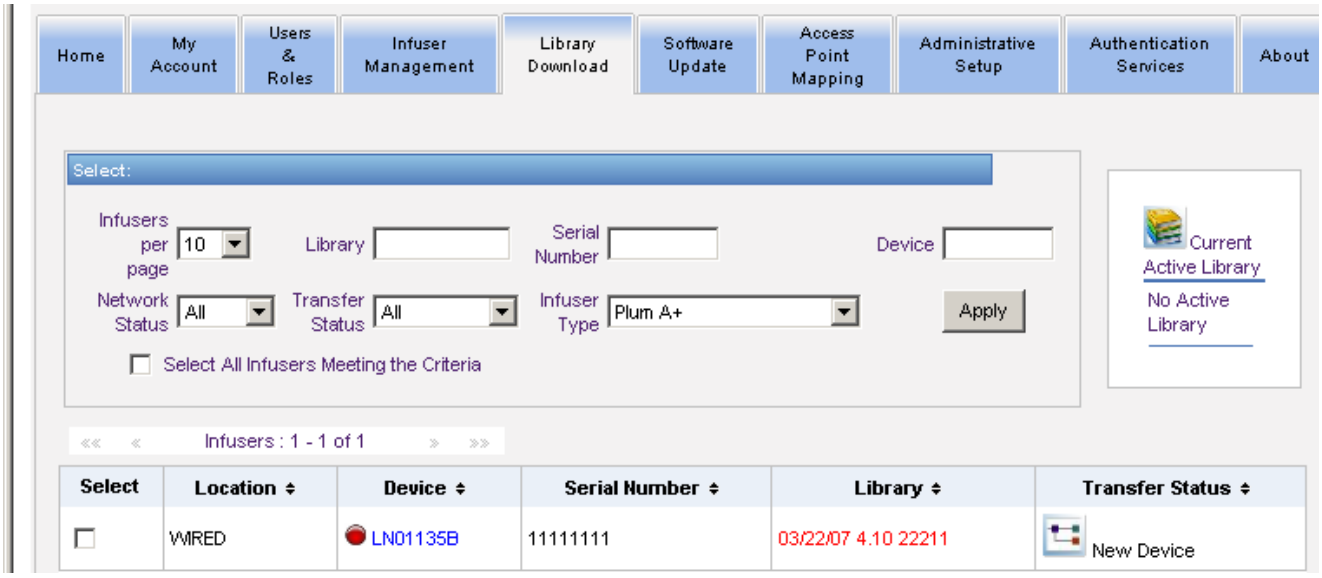
Authorized users initiate and monitor transfers from the Library Transfer area of Hospira MedNet® Software. The area is only visible to users who have been assigned the appropriate access privileges by the System Administrator.

Note: You must be logged in to HMSS to perform Drug Library transfers. For details on how to log in, refer to the *Getting started* section of Module 1.

The Library Transfer area

To access the Library Transfer area, click the **Library Download** tab.

The Library Transfer area first opens with an empty infuser list. Filtering options must be selected to populate the list.



The **Download**, **Cancel**, and **Refresh** buttons are located below the list.

Applying a filter and viewing the infuser list

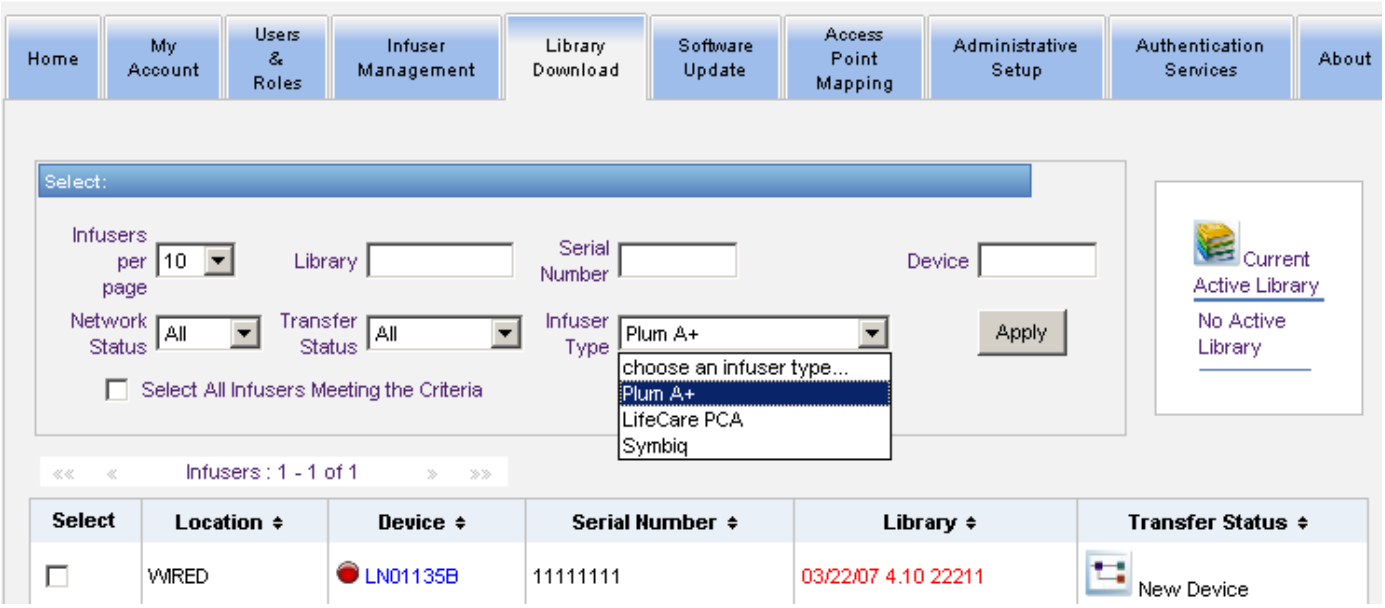
Before performing a Drug Library transfer, you must define the list of targeted infusers by applying a filter that must include the infuser type, and optionally the Library Version, Serial Number, Network Status, Transfer Status, or a combination of these fields.

Filter	Value	Notes
Library (Optional)	Entire Active Library Date and Version Number	Search will not work if any numbers from the library are left out.
Serial Number (Optional)	Valid serial number of an infuser already in HMSS	Useful for finding particular infusers from the entire list
Infuser Type (Mandatory)	Symbiq® Plum A+® LifeCare PCA®	A separate Drug Library must be created for each type of infuser.
Network Status (Optional)	**Online**: Communication with HMSS established	Infuser can receive a new Drug Library.
	Offline: No communicating with HMSS established	Infuser cannot receive a new Drug Library.
Transfer Status (Optional)	**New device:** An infuser to which a library has never been downloaded.	A newly installed infuser
	Requested: The infuser is scheduled to receive a new Drug Library.	The system has not yet communicated with the infuser to begin the transfer. The infuser may be offline.
	Pending: The infuser received a new Drug Library through the connectivity engine, but the data have not yet been posted to the infuser's command module.	The Drug Library download is in progress or it is Complete, but cannot be used until the end user accepts the installation.
	Completed: The infuser received a new Drug Library and an end user accepted the library installation.	The new Drug Library is successfully installed and ready for use.
	Failed: The infuser encountered an error while receiving a new Drug Library.	The infuser may have been turned off or lost the network connection during the transfer. *The Drug Library must be re-sent.*

	Invalid library: The infuser has deleted the internal library and is in the process of installing the new library. (First time transfer of a user-defined Drug Library to an infuser)	The user-defined Drug Library supersedes the default Drug Library contained in the infuser software. Refresh the list; the status will change once the default Drug Library has been replaced.

To apply a filter and generate a list of infusers:

1. Select the infuser type from the **Infuser Type** drop-down list.



2. Select additional filter or filters. (optional)
3. Click **Apply**.

A list of infusers that match the specified filter(s) is displayed.

Checking the Drug Library version

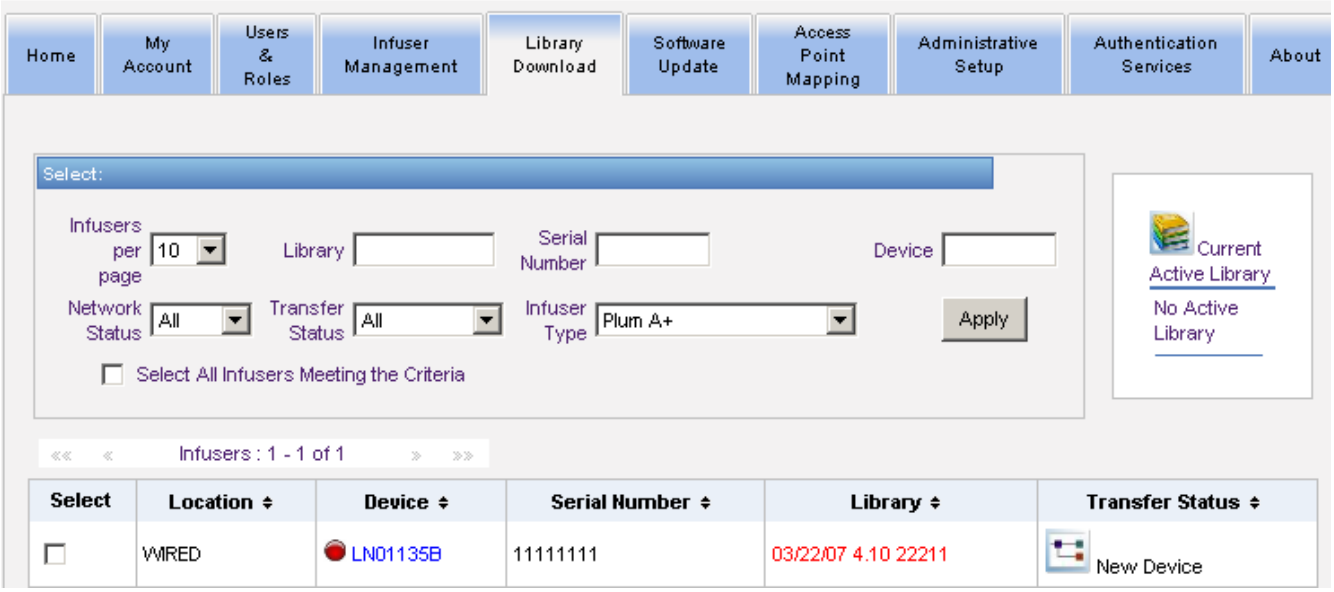
The name of the **Current Active Library** is displayed above the infuser list, at the right of the screen. The software automatically locates the Drug Library that matches the infuser type selected in the list filter. Only one Drug Library for a specified infuser type can be active at any given time.

The **Current Active Library** field corresponds to the **Drug Library ID** field found on the Library Directory page of the Hospira MedNet® Meds™ Software. If no Drug Library for the selected infuser type has ever been finalized, the Current Active Library field will remain blank.

The Drug Library must be created and finalized in the Meds software before being transferred.

Sorting the list of infusers

The infuser list may be sorted by Location, Device ID, Serial Number, Library, or Transfer Status. Click the column header to sort. Click again to reverse the sort order.



Fields in the Library Transfer list

The information in the Library Transfer list is used to identify which infusers need to be updated with a new Drug Library, and to monitor the progress of Drug Library transfers.

Field name	Description	Notes
Select	Used to select individual infusers for Drug Library transfer Clicking the **All** header selects/deselects all infusers; clicking each check box selects/deselects individual infusers	Do not send a Drug Library to "All" infusers. The process works best when done in smaller batches, using the online infusers as a starting point. !

Location	Descriptive physical location of the current or most recent wireless access point in communication with the infuser	Location may be obsolete if the infuser is offline. Exact location will be reported once communication is restored.
Device ID	Unique logical ID assigned to infuser	Automatically detected
Serial Number	Serial number of the infuser	Automatically detected
Library	**Current**: Same version as that shown in the Current Active Library field	**Up to date**
	Other version number: Installed version does not match the current version **Not available**: Newly installed infuser; unreachable and has never reported a status **Invalid library**: Infuser in the process of replacing the internal default Drug Library with the new Drug Library **Default**: No user-defined Drug Library installed	**The Active Library should be transferred to these infusers.** To ensure consistency, the same Drug Library version should be loaded on all infusers of a given type. Infusers with an "older version" will continue to function, but the information may be inconsistent with current Drug Library definitions. !
Transfer Status	**New Device**: No library has ever been downloaded	The default Drug Library will be used until replaced with a user-defined Drug Library.
	Requested: Transfer has not yet begun; infuser may be offline	System will retry the download Transfer may still be canceled
	Pending: Transfer in progress or Pending acceptance by the user	Transfer can no longer be canceled
	Completed: A user-defined Drug Library has been received and activated at the infuser	Default Drug Library replaced Does not indicate that the Drug Library is the most current
	Failed: Infuser encountered an error while receiving or installing a new Drug Library	Transfer must be repeated

Transferring the Active Drug Library to infusers

Test the library transfer and Drug Library settings on a small group of infusers before deploying the library across the entire institution.

It is recommended that you begin with a smaller subset of your devices, in the range of 10-15 online infusers, and test the transfer to this number of devices. If this works to your expectations, try gradually increasing the number of infusers to push to at one time. To transfer a Drug Library, you must first generate a list of targeted infusers:

1. Select an **Infuser Type** from the drop-down list (mandatory).
   Apply **Network Status** and/or **Transfer Status** filters (optional).
2. Verify that the **Current Active Library** field corresponds to the desired version.
3. Select the infusers that require the Drug Library download by clicking individual **check boxes**.
4. Click the **Download** button to initiate the transfer.

The same Drug Library version should be loaded on all infusers of a given type.

The library transfer should typically be performed on all infusers *except* those marked as:

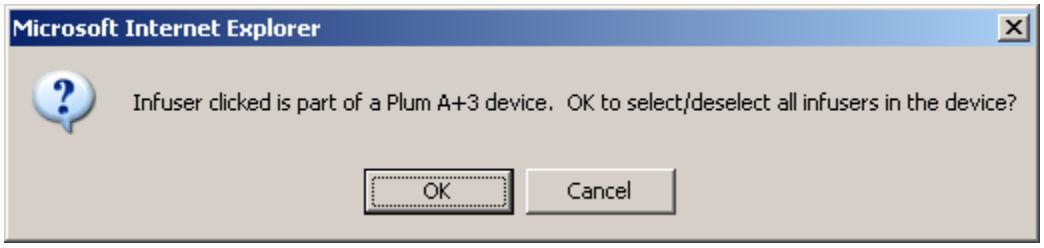
- "Current" under the **Library** field
- "Pending" under the **Transfer Status** field

To help ensure successful transfer, the **Network Status** should be "Online." If the selected infuser is "Offline," the Requested library transfer cannot start. The system will attempt to reach the infuser at regular intervals, but may be unsuccessful.

For multi-channel infusers

When requesting a Drug Library transfer for a multi-channel infuser (e.g., triple-channel Plum A+3®), a dialog box may ask you to confirm that you want to transfer the Drug Library to the control module for each of the device's infusers.

Click **OK** to proceed with the transfer.


Microsoft Internet Explorer
Infuser clicked is part of a Plum A+3 device. OK to select/deselect all infusers in the device?
OK
Cancel

You may turn off this warning message by deselecting the check box below the infuser list.

Monitoring the Drug Library download

A Drug Library transfer typically takes from 5 to 10 minutes. You can monitor the progress from the Library Transfer area.

After beginning the download:

1. Click **Refresh** to update the infuser list. The following status will be displayed during download:
   - "Pending" – the library is being downloaded to the infuser's CE or (HMSS 5.4 only) the library has been downloaded to the infuser's CE.
   - "On Pump" – (HMSS 5.5 only) library has been downloaded to the infuser's CE
   - "Requested" – library is scheduled to be downloaded to infuser's CE.
2. To cancel the transfer for one or more infusers, select the corresponding check box(es) and click **Cancel**.
   - A library transfer can only be cancelled before the download begins (**Transfer Status:** "Requested").

Tip

You may change the infuser list's filter settings to show only those infusers with a "Pending" transfer *or* only those with a "Requested" transfer. Once HMSS communicates with an infuser and the download begins, the infuser will appear on the "Pending" list *or* disappear from the "Requested" list.

Completing the Drug Library installation

The downloaded Drug Library is received in the communications portion of the infuser's control module. It must be moved to the command portion of the control module before it will be available.

After a Drug Library is successfully downloaded, the infuser will prompt the user to accept the transfer:

1. Press **Yes**.
   - The new Drug Library is moved to the command portion of the control module and then automatically turns itself off.
   - In HMSS 5.4, if a user selects **No**, the infuser will issue another prompt to accept the new Drug Library the next time it is turned on. The transfer status will remain as "Pending" until the transfer is completed.
   - In HMSS 5.5, if a user selects **No**, the infuser will issue another prompt to accept the new Drug Library the next time it is turned on. The transfer status will remain as "On Pump" until the transfer is completed.
2. Reboot by turning the infuser **On**.
   - The **Transfer Status** field for the infuser will change to "Completed." The CCA and medication entries defined in the Drug Library are now available on the infuser.
3. Verify that all infusers in the list display **Transfer Status:** "Completed."
   - If a status other than Completed is displayed, refer to the Troubleshooting section of this Module.

Clinical end users must be trained on accepting a new Drug Library.

The final steps of the library transfer do not need to be performed by the Library Transfer Team. A nurse or other clinical user can accept a new Drug Library as they program the device for use. However, if these users are not aware of the transfer process, they may reject the transfer. The library will then have to be accepted at a later date and the infuser will remain in "pending" status until that time.

NOTE: Do NOT unplug the infuser after accepting the new Drug Library as this will result in an E456 Error indicating that the Drug Library may have been corrupted during the transfer process.

Troubleshooting Drug Library transfers

Problems may arise at different stages in the Drug Library transfer process. Understanding the transfer process and associated factors will help you to rapidly identify and resolve any difficulties.

Step(s)	Problem(s)	Cause(s)	Solution(s)
Start download **Status Requested** *Infuser online?*	Infuser remains in Requested status	Infuser turned off or not connected to the network Library remains in transfer queue; server retries at next download interval	Turn on infuser power Verify or switch network connection Reboot infuser
Download begins **Status Pending** Download completed	Cannot cancel transfer	Download to an infuser in the Pending state cannot be canceled.	Only transfers in Requested state can be canceled
	Infuser remains in “Pending” status in HMSS 5.4, and “On Pump” status in HMSS 5.5	Library not yet installed in command module of infuser	Accept transfer at infuser screen
		Library has been accepted but infuser has not yet reported back to HMSS its completed status	Connect infuser to network and allow normal communications
Transfer accepted?	User rejects transfer at infuser prompt	Additional user training may be warranted	Infuser will repeat prompt until accepted
Library moved to control module	Invalid library	Default library in the process of being replaced with the new library	Refresh list
Status Complete	Successful transfer		
At any stage			
Status Failed	Error encountered while receiving or installing a new Drug Library. Repeat transfer.		

If the problem continues, contact Hospira, Inc. Technical Support Operations. The phone number for this resource is 1-800-241-4002, Option 4. Please do not call your IT resource, Sales Team or Program Manager directly. In order for the issue to be properly recorded and addressed, the TSO must be contacted to initiate the troubleshooting process.

Self-assessment

Select the best answer to each question.

1. You log in to Hospira MedNet® Software to verify which new infusers have successfully received their first user-defined Drug Library.

Which Transfer Status shows that the Drug Library was successfully downloaded, but has not yet been activated at the infuser?

a) New Device
b) Requested
c) Pending (in HMSS 5.4), or On Pump (in HMSS 5.5)
d) Completed

2. An infuser has just received a new Drug Library, but the library cannot be used yet.

What do you need to do to activate the new Drug Library on the infuser?

a) Change the **Transfer Status** to **Completed** in the **Library Transfer** list.
b) Press the **Yes** key on the infuser to accept the transfer.
c) Program the infuser with a **default CCA.**
d) Turn the infuser **Off** and then **On** again.

3. The Library Transfer list shows that the Drug Library you just downloaded to a new infuser is **Invalid.**

What are the first steps to resolve this problem?

a) Ask the Library Creation team to regenerate the finalized Drug Library
b) Call Hospira Technical Support Operations
c) Repeat the library transfer
d) Wait a few minutes, then refresh the list

4. The Library Transfer list shows that the download you initiated is still in "Requested" status.

What could be the reason(s) for this?

a) Infuser is offline
b) Loading into communications module is still in progress
c) Network connection unavailable
d) Transfer pending acceptance by user

Answers: 1. c), 2. b), 3. d); 4. a), b), c)

HMSS IT Implementation Training Guide

Module 5. Reporting

Hospira MedNet® Software Suite (HMSS) collects system usage data. This data may be used to generate reports on infusers, medications, and events relating to usage. IT, Biomedical, Pharmacy, Clinical, and other users such as Risk Managers and Medication Safety Analysts will all benefit from learning about the different reporting functions that are available.

This Module provides an introduction to the reports available through HMSS.

This Module consists of 1 section:

- Hospira MedNet® Reports

For training purposes only.

Refer to the detailed instructions Hospira MedNet® User Guides and Infuser System Operating Manuals prior to use.

5-1 Hospira MedNet® Reports

Who: Data Gathering and Report Team	**What:** Building, printing, and understanding reports

Hospira MedNet® Software Suite (HMSS) contains a series of standard reports, which cover aspects of infuser usage. Reports may be generated manually, on an "as-needed" basis, or automatically, at prescheduled times.

Upon completion of this section, the user will be able to:

- Describe the types of reports that can be generated with HMSS
- Match appropriate report types to specific needs
- Generate on-demand reports using HMSS
- Navigate within, print, and export reports

Overview of reports

Every infuser maintains a log of all events. Events include, but are not limited to, programming selections, alerts, alarms, safety and maintenance-related **warnings** or interventions, malfunctions, and power shutdowns.

Warning: An indication advising of a potentially dangerous situation; e.g., low battery.

Event logs are forwarded to the server on which Hospira MedNet® Software is installed and stored in the database. This data may be used to generate a wide variety of reports, filtered according to infuser ID, clinical care area (CCA), medication, alarms, alerts, user responses, date and time, or other applicable fields.

The standardized reports generated with HMSS provide information that can help hospitals to:

- Manage infuser inventory and monitor usage
- Examine IV medication and fluid delivery trends
- Evaluate best practices related to IV infusion therapy
- Assess compliance with the hospital's dosing and clinical best practices
- Reduce and manage IV medication-related errors
- Obtain actionable information for continuous quality improvement (CQI)

Note: Not all reports pertain to all models of infuser.

Report categories

Hospira MedNet® Software Suite (HMSS) and the Hospira MedNet® Meds™ application both provide reporting capabilities. Thus, it is important to understand which types of reports may be generated in each application.

Reports in HMSS

HMSS reports display data pertaining to various aspects of infuser use. Reports accessible through HMSS are dynamically generated and displayed.

Event log data received from the infusers are stored in the HMSS database. The software processes infuser data and renders formatted reports database.

For the purpose of this training, these reports may be grouped into four broad categories based on the types of information they provide:

- **Asset tracking and maintenance reports**: Status, location, and usage patterns for the infusers themselves
- **Infusion reports**: IV infusion practices and how infusers are being used
- **Medication reports**: Which medications are being infused and how often
- **Variance reports:** User responses to safety-related alerts

Reports in the Meds Application

Rule set: Rules guiding infusion of a medication; defined in a Drug Library and applied at the infuser; depending on infuser type, may specify limits on dose rates, volumes, and/or amounts.

Hospira MedNet® Meds™ reports display data pertaining to the Drug Library and Worksheets. The Meds Software extracts the desired Drug Library data from the database and displays reports through the Microsoft® Internet Explorer browser.

These reports summarize information on:

- **Master infuser settings:** Institution-wide default settings applied to all infusers of a given type
- **CCA settings:** Specific infuser settings and medications associated with each clinical care area (CCA)
- **Medications:** List of medications and associated administration **rule sets**

Reports generated with the Meds Software summarize Drug Library configuration parameters, but do not reflect dynamic usage data.

Note: Procedures related to Meds reporting are beyond the scope of this chapter and will be addressed in depth during the training on Drug Library Creation with the Meds Software.

For more information on reports available through the Meds Software, refer to the Reports chapter in *Module 5* of the *Hospira MedNet® Software User Guide*

Asset tracking and maintenance reports

Asset tracking and maintenance reports are used to manage the hospital's infuser inventory.

The primary audiences for these reports include biomedical engineers and technicians, IT professionals, and materials management staff. They may be of particular interest to the IT and Device Tracking and Maintenance Teams.

Report	Potential uses	Infuser type		
		Symbiq®	Plum A+®	LifeCare PCA®
Asset Tracker Lists last known physical location, network status, CCA, and Drug Library information for infusers.	• Identifying infusers that have not communicated with the network • Locating the wireless access point with which an infuser last communicated • Verifying whether all infusers have the current version of the active Drug Library	X	X	X
Asset Utilization Cross-tabulates the hours an individual infuser has been used versus average infuser usage.	• Monitoring actual and average number of hours of use per month or over a selected time period • Comparing use of an individual infuser to that of the entire infuser inventory	X	X	X
Event/Alarm Log Detailed, chronological listing of all events, alarms, and alerts associated with an infuser.	• Analyzing infuser runtime, malfunctions, alarms, battery or other warnings, and Biomed Mode operations • Tracking and reviewing program selections, keystrokes, alerts, and any associated edits or overrides • Troubleshooting problems with a specific infuser	X	X	X
Infuser Status Provides a snapshot of current infuser usage and power status and identifies infusers that have not communicated for a specified time period.	• Tracking unused or under-used assets • Last known status of non-communicating infusers	X	X	X

Software Download Lists the software version installed on each infuser, as well as the start/end times and transfer status of the latest software update.	• Ensuring infuser software is up-to-date • Monitoring transfer progress of pending updates; ratio of downloaded vs. total software components	X		X

Infusion reports

For the purposes of reporting, the term "infusion" refers to the infusion of a single medication or fluid, at a given concentration, and any associated infuser programming and rule sets that control delivery.

Infusion reports may be used to:

- Assess current clinical practices and define institutional "best practices" for infusions
- Adjust Drug Library rule sets and associated **hard and/or soft limits** to best reflect the needs of clinical users

Hard and soft limits: Upper and/or lower dose limits for a medication and CCA; soft limits may be overridden; hard limits may not. (On Symbiq® infusers, users can override a hard limit with an authorized password).

The primary audiences for medication reports include nurse managers, pharmacists, and risk managers. They may be of particular interest to the Drug Library Creation, Clinical, and Data Gathering and Reporting Teams.

Report	Potential uses	Infuser type		
		Symbiq®	Plum A+®	LifeCare PCA®
Auto-Programming Provides information about the usage of auto-programming functionality when Hospira MedNet® Software is integrated with a BPOC system.	• Number of manual vs. auto programs run • Percentage of manual vs. auto programs run	X	X	X
Auto-Programming with unmatched Medication (optional) Provides information about the usage of auto-programming functionality when Hospira MedNet® Software is integrated with a BPOC system.	• Information about auto-programming requests that result in No Drug Selected or Other Drug on the infuser	X	X	

Infusion Status Tabulates infusions, medications, statuses, alarms or interruptions, overrides, and applicable rule sets.	• Monitoring infusion history • Following up on infusions that are running outside of limits	X	X	
Infusion Summary Pie chart summarizing infusion activity, including percentages for each type of alert and associated user responses.	• Assessing compliance with Drug Library recommendations • Monitoring hard and soft limit alerts • Identifying whether users edit or override programs following an alert	X	X	X
Line Usage Analysis Pie chart showing usage of the two lines on the Plum A+® infuser.	• Measuring percentage of infusions using simple, standard, loading dose, or multi-step programs • Measuring percentage of concurrent and piggyback infusions		X	
Next IV Due Tabulates details of ongoing infusions, remaining volumes, and when next fluids are due.	• Identifying upcoming infusions according to CCA or medication • Ensuring timely preparation of infusion solutions	X	X	X
PCA Utilization Tabulates PCA therapy data, including usage frequency of modes and protocols.	• Tracking usage statistics related to patient-controlled analgesia			X
PCA History This report allows the user to obtain PCA medication usage data for an individual Infuser.	• Summary of infusion settings • History of Drug Infusion			X
Total Program Activity Graphs programming activity, edits, and overrides during the selected period.	• Validating the clinical appropriateness of Drug Library definitions	X	X	X

Medication reports

Medication reports provide information on the individual medications delivered by infusion. These reports show which medications are used most frequently, whether Drug Library guidelines are referred to, modified, or accepted "as is" during infuser programming, and how clinicians respond to alerts. Medication reports reflect how well the Drug Library's limits and rules for a medication meet actual needs in clinical practice.

The primary audiences for medication reports include nurse managers, pharmacists, and risk managers. They may be of particular interest to the Drug Library Creation, Clinical, and Data Gathering and Reporting Teams.

Report	Potential uses	Infuser type		
		Symbiq®	Plum A+®	LifeCare PCA®
Medication Selected *vs.* No Medication Selected - by Time of Day Stacked bar graph showing the number of infusions started during each hour of the day, including whether or not the clinician selected a medication in the Drug Library.	• Evaluating whether clinicians access and use Drug Library guidelines during infuser programming	X	X	
Medications Infused Tabulates clinicians' responses to alerts for individual medications. May be analyzed by: • CCA • Medication • Service Line	• Assessing how often clinicians confirm an infuser program without changes and how often edits are made • Analyzing responses to upper and lower hard and soft limit alerts	X	X	X
Most Commonly Infused Medications Pie chart showing 15 most commonly infused medications selected from the Drug Library.	• Identifying commonly infused medications for each CCA, or across the institution • Prioritizing high-use drugs for quicker access during infuser programming	X	X	X

Variance reports

Variance: Deviation (%) of programmed value from the limit defined in the Drug Library

Editing: Responding to an alert by changing the value entered.

Overriding: Bypassing an alert and accepting the value entered.

Variance data are collected whenever a user receives an alert during infuser programming and responds by **editing** the program or **overriding** the alert. Variance represents how much a user's initial programmed value differed from a limit defined in the Drug Library. It is expressed as percentage, calculated as follows:

(Initial Dose - Limit Violated) / Limit Violated = Variance (%)

Positive variances correspond to Upper Limit violations; negative variances correspond to Lower Limit violations.

Variance reports may be used to analyze programming errors that could lead to adverse drug events, and to quantify how often software-defined limits and alerts may have helped to avert potential adverse events.

The primary audiences for medication reports include nurse managers, pharmacists, and risk managers. They may be of particular interest to the Drug Library Creation, Clinical, and Data Gathering and Reporting Teams.

Report	Potential uses	Infuser type		
		Symbiq®	Plum A+®	LifeCare PCA®
Edit Variance Detail Lists the details of every infuser program in which the user received an alert and responded by editing the program.	• Evaluating soft/hard dose limit errors and adjustments • Identifying averted adverse drug events	X	X	X
Edit Variance Summary Tabulates the number of Edit events as a single line for each alert type and rule set per medication.	• Tracking trends in compliance with the hospital's dosing and clinical best practices	X	X	X
Override Variance Detail Lists the details of every infuser program in which the user received an alert, but continued without modifying the original programmed value.	• Evaluating soft/hard dose limit transgressions • Identifying potentially unsafe practices	X	X	X

Override Variance Summary Tabulates the number of Override events as a single line for each alert type and rule set per medication.	• Monitoring frequent overrides, which may indicate that Drug Library limits may not match actual clinical practice	**X**	**X**	**X**
Soft Limit Alert Responses Cross-tabulates all responses to soft limit alerts, by medication or by CCA.	• Evaluating appropriateness of Drug Library limits for specific CCAs or medications	**X**	**X**	**X**

Note: With Plum A+® and LifeCare PCA® infusers, hard limit alerts cannot be overridden. The software prevents clinicians from programming an infuser outside of lower or upper hard limits. With Symbiq® infusers, authorized users may override a hard limit by using a special password.

Report formats

Most reports present data in tabular format, listed in rows and columns, with any applicable totals. In some instances, data may be represented graphically. Note that the presentation of reports specific to one type of infuser may vary according to the infuser model.

Report Formats

Hospira MedNet® Reports use the following formats:

Format	Description
Table	Standard report format showing data in rows and columns
Pie Chart	Shows data in pies containing individual slices which total to 100% in each pie
Line Graph	Shows data as one or more continuous lines, typically across a period of time
Bar Graph	Shows data as bars which are often stacked to indicate different results within an individual bar, typically across a period of time
Crosstab	Shows a comprehensive view of data in a grid, with subtotals for each section Totals are typically provided for both rows and columns

Access to Reports

Hospira MedNet® Reports can be accessed from any Web browser configured to point to the Hospira MedNet® server. You must have a user account in order to

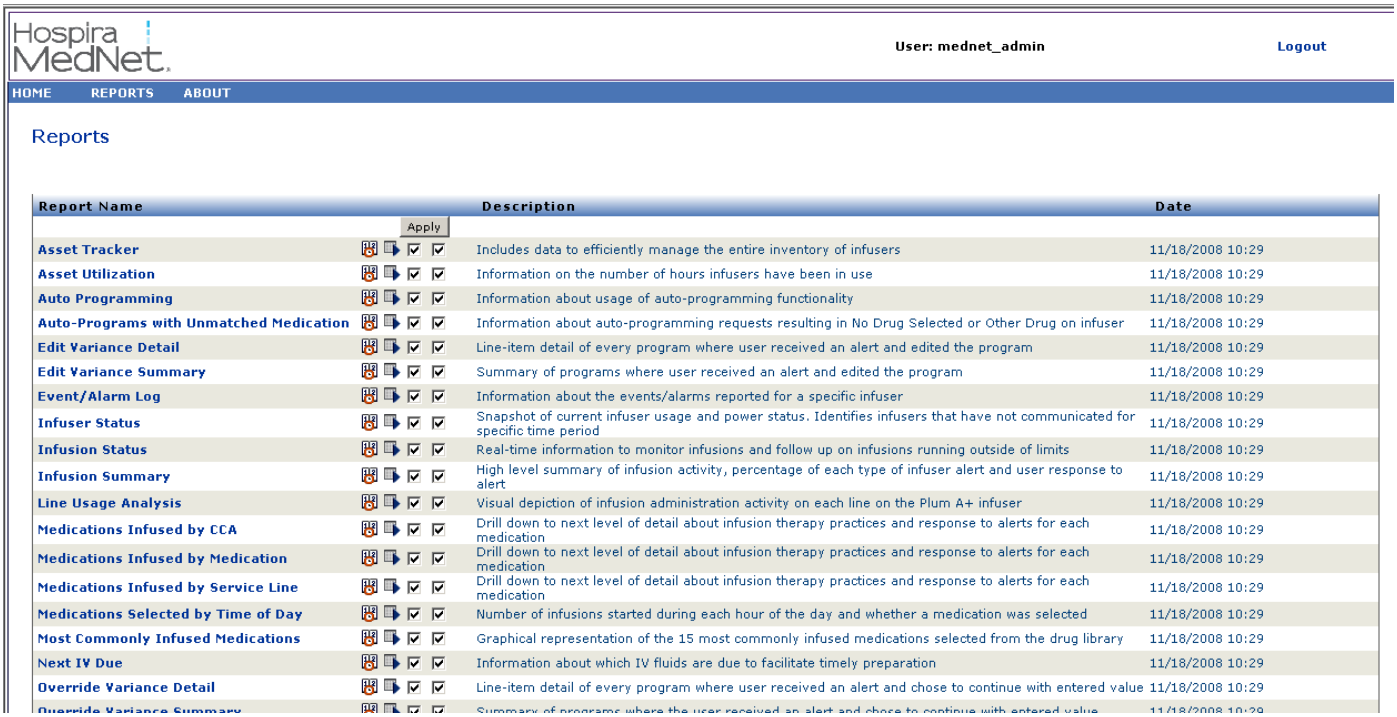
access reports. Contact your Hospira MedNet® system administrator for a user account and the address to link to the server home page.

Scheduling Reports

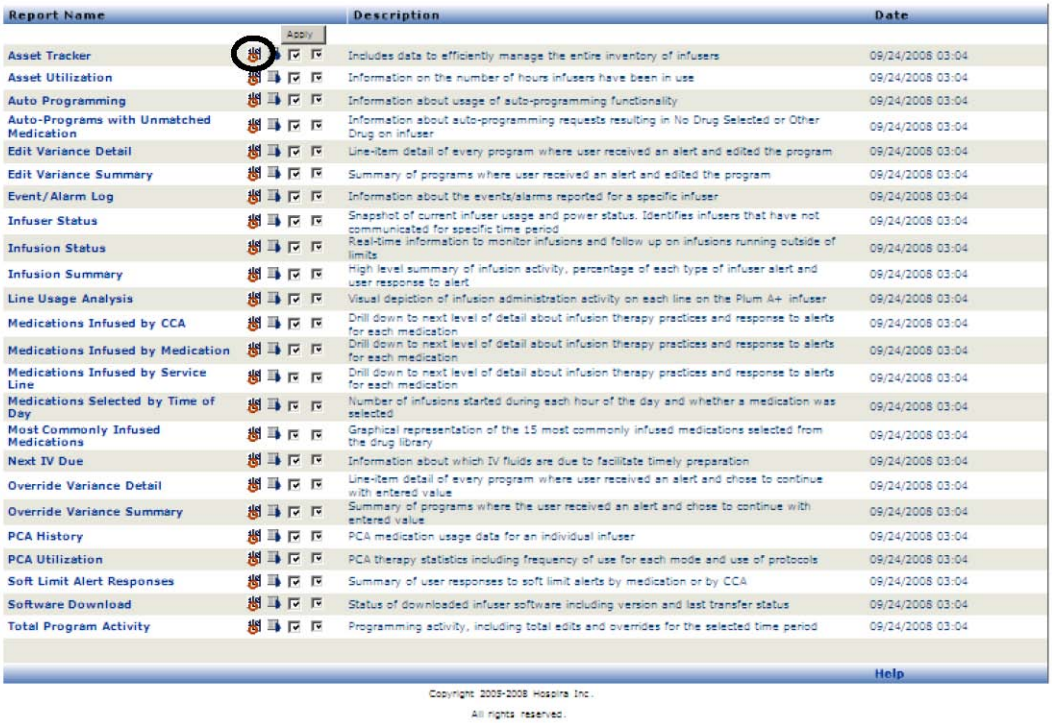
Hospira MedNet® Software uses the Jasper Reports application, which schedules reports to run at predetermined times, intervals, or days of the week. Scheduled report output may be sent to a location on your network, such as a folder. It can be sent to a printer, an e-mail address or list.

From the Hospira MedNet® Software home page, click on Hospira MedNet® Performance.

The following screen appears. Note the descriptions next to the fields. The Report Publish Date is the date that the Software was installed.


Hospira MedNet
User: mednet_admin
Logout
HOME
REPORTS
ABOUT
Reports
Report Name
Description
Date
Apply
Asset Tracker
Includes data to efficiently manage the entire inventory of infusers
11/18/2008 10:29
Asset Utilization
Information on the number of hours infusers have been in use
11/18/2008 10:29
Auto Programming
Information about usage of auto-programming functionality
11/18/2008 10:29
Auto-Programs with Unmatched Medication
Information about auto-programming requests resulting in No Drug Selected or Other Drug on infuser
11/18/2008 10:29
Edit Variance Detail
Line-item detail of every program where user received an alert and edited the program
11/18/2008 10:29
Edit Variance Summary
Summary of programs where user received an alert and edited the program
11/18/2008 10:29
Event/Alarm Log
Information about the events/alarms reported for a specific infuser
11/18/2008 10:29
Infuser Status
Snapshot of current infuser usage and power status. Identifies infusers that have not communicated for specific time period
11/18/2008 10:29
Infusion Status
Real-time information to monitor infusions and follow up on infusions running outside of limits
11/18/2008 10:29
Infusion Summary
High level summary of infusion activity, percentage of each type of infuser alert and user response to alert
11/18/2008 10:29
Line Usage Analysis
Visual depiction of infusion administration activity on each line on the Plum A+ infuser
11/18/2008 10:29
Medications Infused by CCA
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
11/18/2008 10:29
Medications Infused by Medication
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
11/18/2008 10:29
Medications Infused by Service Line
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
11/18/2008 10:29
Medications Selected by Time of Day
Number of infusions started during each hour of the day and whether a medication was selected
11/18/2008 10:29
Most Commonly Infused Medications
Graphical representation of the 15 most commonly infused medications selected from the drug library
11/18/2008 10:29
Next IV Due
Information about which IV fluids are due to facilitate timely preparation
11/18/2008 10:29
Override Variance Detail
Line-item detail of every program where user received an alert and chose to continue with entered value
11/18/2008 10:29

1. To schedule a report, click on the **Calendar** Icon to the right of the desired report.


Report Name
Description
Date
Apply
Asset Tracker
Includes data to efficiently manage the entire inventory of infusers
09/24/2008 03:04
Asset Utilization
Information on the number of hours infusers have been in use
09/24/2008 03:04
Auto Programming
Information about usage of auto-programming functionality
09/24/2008 03:04
Auto-Programs with Unmatched Medication
Information about auto-programming requests resulting in No Drug Selected or Other Drug on infuser
09/24/2008 03:04
Edit Variance Detail
Line-item detail of every program where user received an alert and edited the program
09/24/2008 03:04
Edit Variance Summary
Summary of programs where user received an alert and edited the program
09/24/2008 03:04
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Snapshot of current infuser usage and power status. Identifies infusers that have not communicated for specific time period
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Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
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Medications Infused by Service Line
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
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Line-item detail of every program where user received an alert and chose to continue with entered value
09/24/2008 03:04
Override Variance Summary
Summary of programs where the user received an alert and chose to continue with entered value
09/24/2008 03:04
PCA History
PCA medication usage data for an individual infuser
09/24/2008 03:04
PCA Utilization
PCA therapy statistics including frequency of use for each mode and use of protocols
09/24/2008 03:04
Soft Limit Alert Responses
Summary of user responses to soft limit alerts by medication or by CCA
09/24/2008 03:04
Software Download
Status of downloaded infuser software including version and last transfer status
09/24/2008 03:04
Total Program Activity
Programming activity, including total edits and overrides for the selected time period
09/24/2008 03:04
Help
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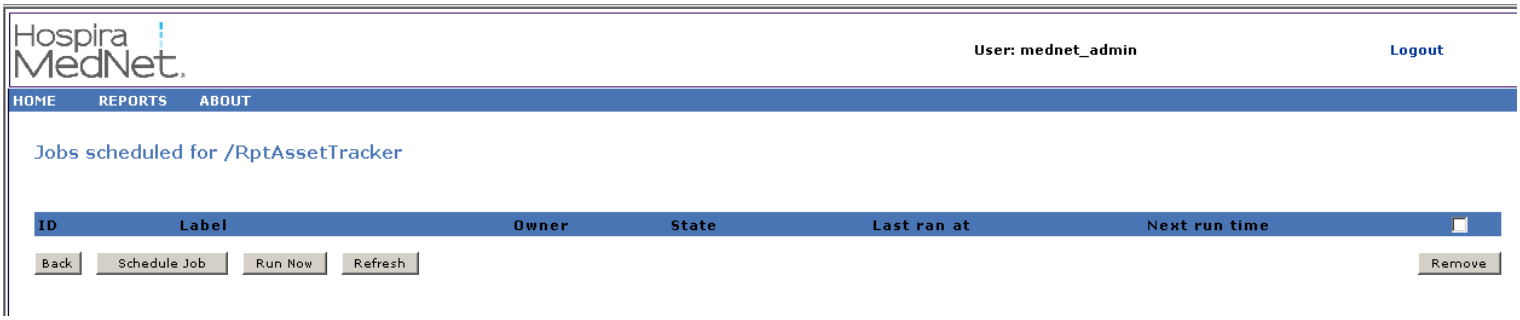
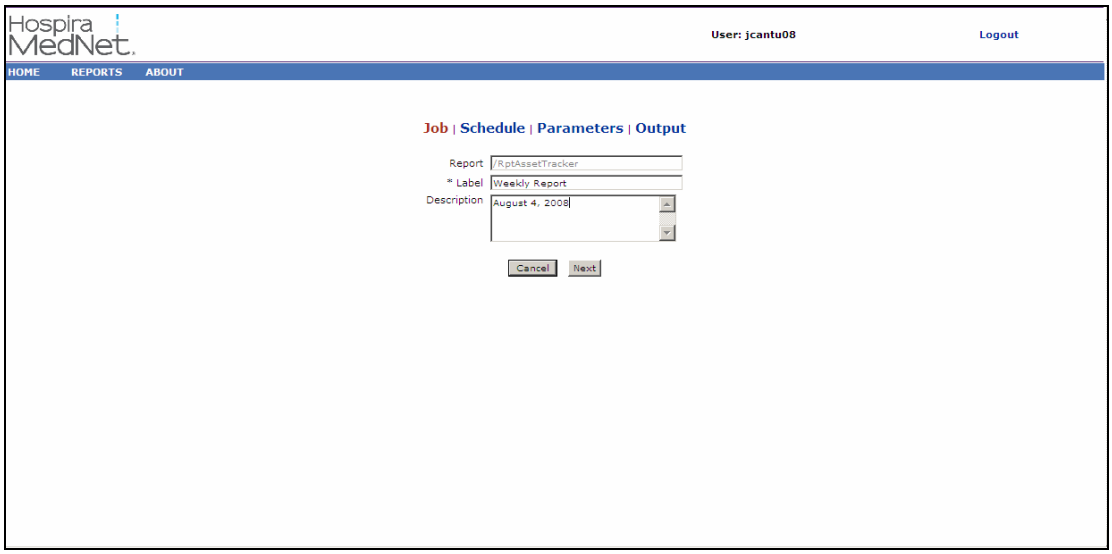
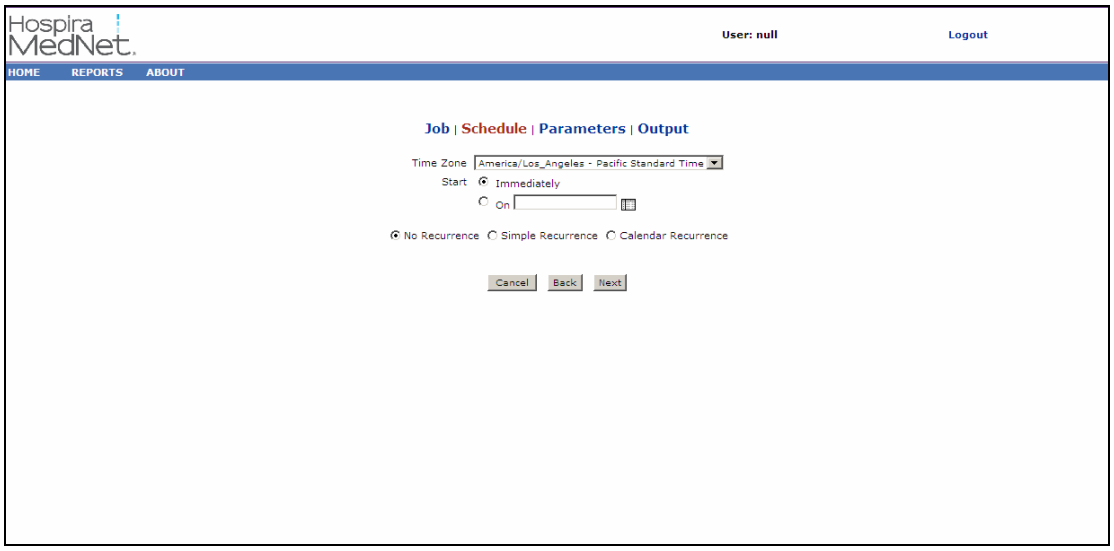
2. Click **Schedule Job**.







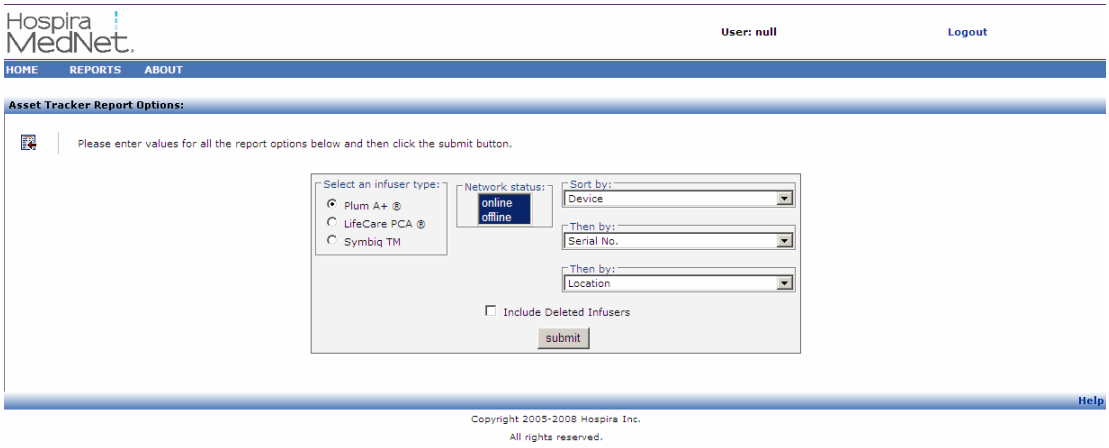
3. Select the time zone.

4. Specify the desired date by clicking on the calendar icon on the right.

5. Specify the recurrence schedule. When you specify the recurrence schedule, other options may appear due to the simple recurrence or calendar recurrence selections.

6. Click **Next**.

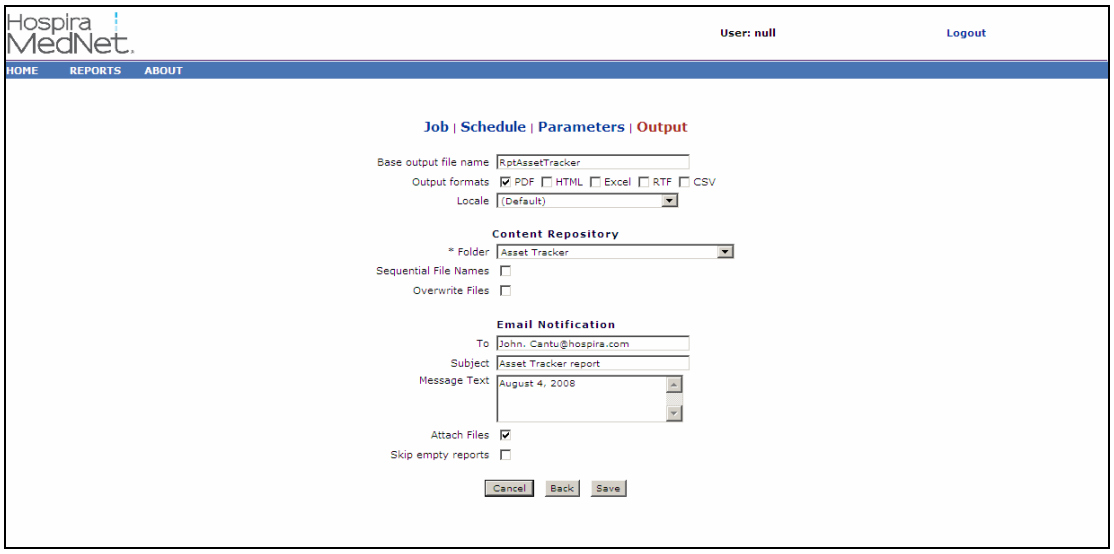
The **Report Options** screen is displayed:



7. Complete the required information. See additional information in this chapter for your specific report.

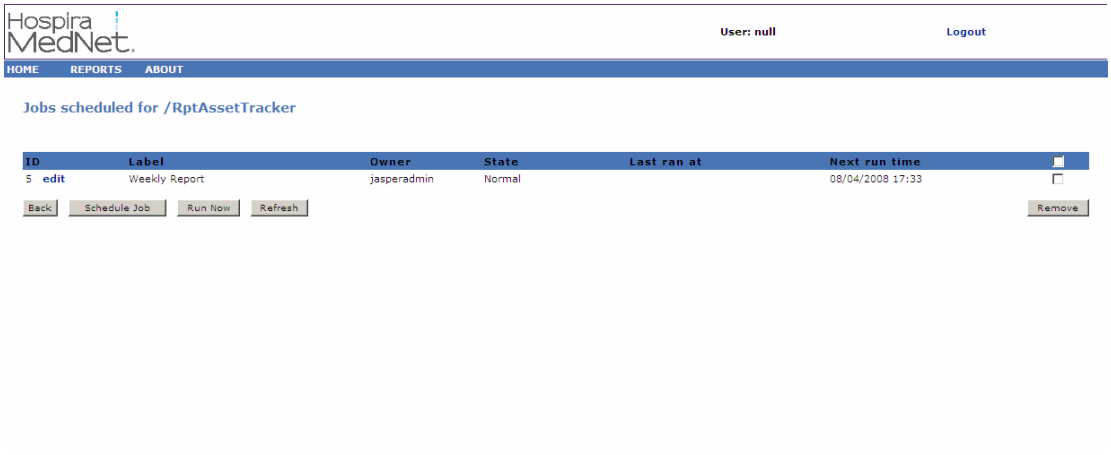
8. Click **Submit**.

The **Output** screen appears:

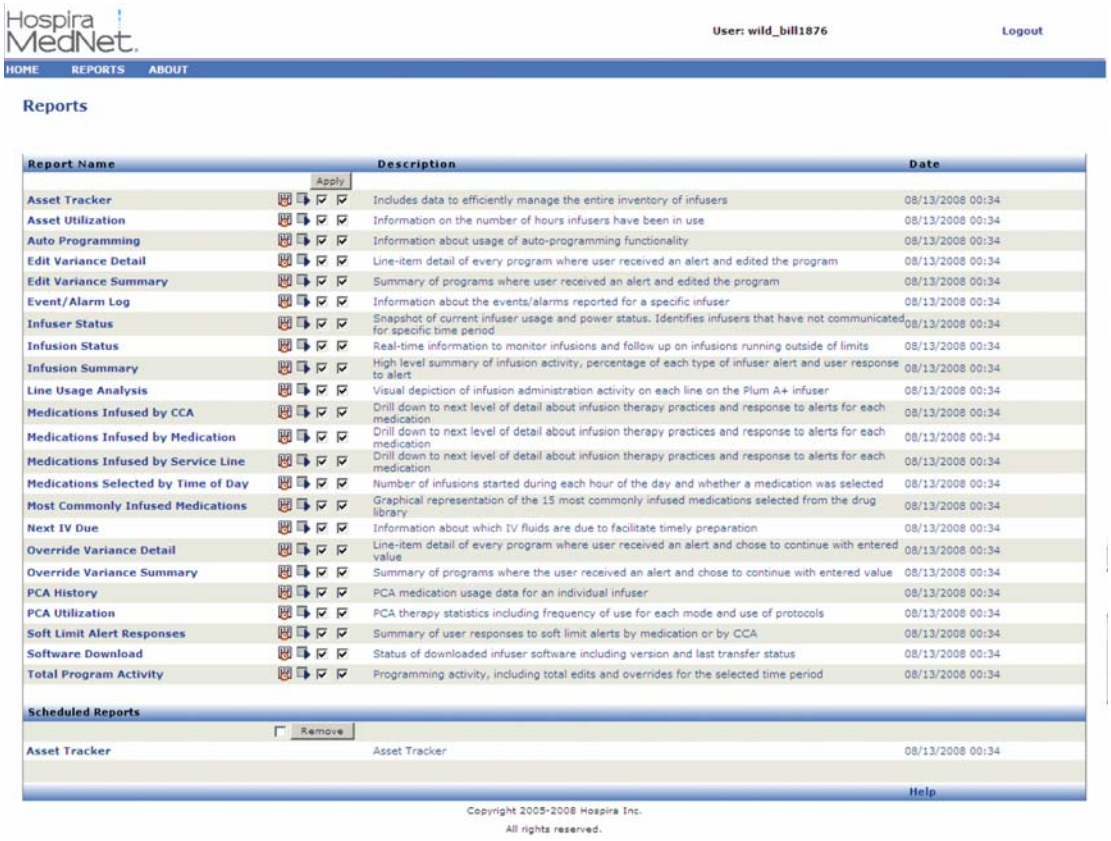


9. Specify the base output file name.
10. Specify the output format.
11. Specify the report destination or repository (optional).
12. Specify the e-mail notification parameters (optional).
13. Check the "Attach Files" check box to receive report file(s) attachment in your e-mail (optional).
14. Click **Save**.

The report is scheduled for Asset Tracker. The Edit option allows you to change the Schedule Report options. Check the Remove box to undo the scheduling for the report.



The scheduled reports are visible at the bottom of the **Reports View**. By clicking on the scheduled report name, you can run that report with the same report options.


Hospira MedNet
User: wild_bill1876
Logout
HOME
REPORTS
ABOUT
Reports
Report Name
Description
Date
Apply
Asset Tracker
Includes data to efficiently manage the entire inventory of infusers
08/13/2008 00:34
Asset Utilization
Information on the number of hours infusers have been in use
08/13/2008 00:34
Auto Programming
Information about usage of auto-programming functionality
08/13/2008 00:34
Edit Variance Detail
Line-item detail of every program where user received an alert and edited the program
08/13/2008 00:34
Edit Variance Summary
Summary of programs where user received an alert and edited the program
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08/13/2008 00:34
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Snapshot of current infuser usage and power status. Identifies infusers that have not communicated for specific time period
08/13/2008 00:34
Infusion Status
Real-time information to monitor infusions and follow up on infusions running outside of limits
08/13/2008 00:34
Infusion Summary
High level summary of infusion activity, percentage of each type of infuser alert and user response to alert
08/13/2008 00:34
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Visual depiction of infusion administration activity on each line on the Plum A+ infuser
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Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
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Medications Infused by Medication
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
08/13/2008 00:34
Medications Infused by Service Line
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
08/13/2008 00:34
Medications Selected by Time of Day
Number of infusions started during each hour of the day and whether a medication was selected
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Most Commonly Infused Medications
Graphical representation of the 15 most commonly infused medications selected from the drug library
08/13/2008 00:34
Next IV Due
Information about which IV fluids are due to facilitate timely preparation
08/13/2008 00:34
Override Variance Detail
Line-item detail of every program where user received an alert and chose to continue with entered value
08/13/2008 00:34
Override Variance Summary
Summary of programs where the user received an alert and chose to continue with entered value
08/13/2008 00:34
PCA History
PCA medication usage data for an individual infuser
08/13/2008 00:34
PCA Utilization
PCA therapy statistics including frequency of use for each mode and use of protocols
08/13/2008 00:34
Soft Limit Alert Responses
Summary of user responses to soft limit alerts by medication or by CCA
08/13/2008 00:34
Software Download
Status of downloaded infuser software including version and last transfer status
08/13/2008 00:34
Total Program Activity
Programming activity, including total edits and overrides for the selected time period
08/13/2008 00:34
Scheduled Reports
Remove
Asset Tracker
Asset Tracker
08/13/2008 00:34
Help
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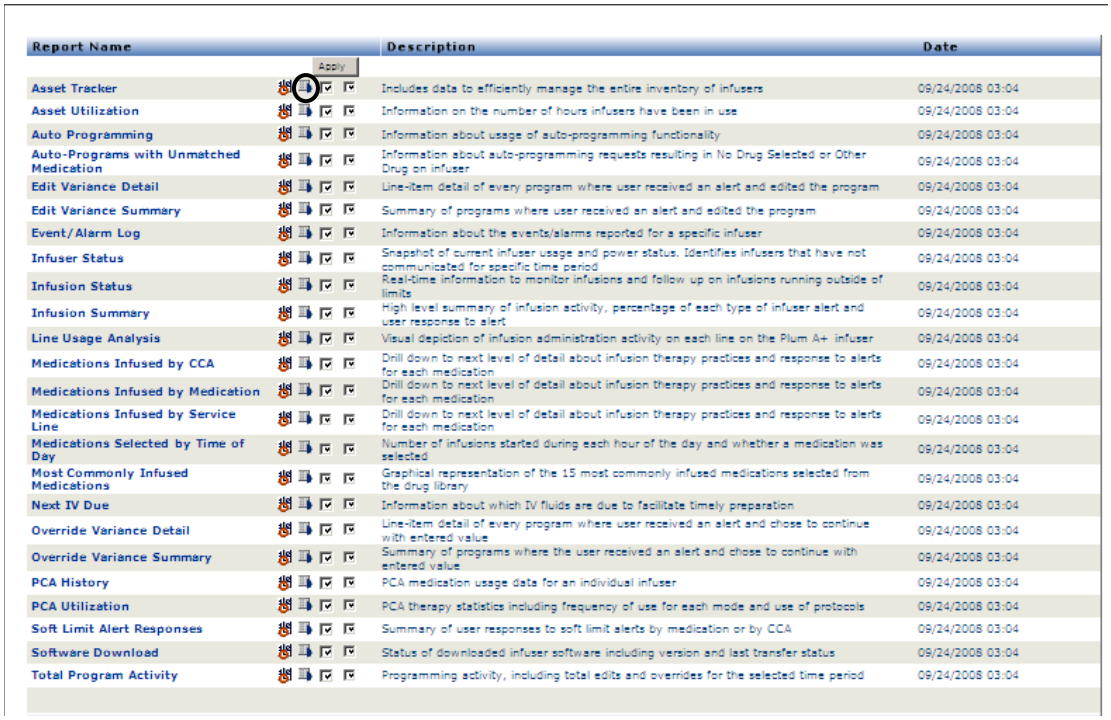
Running a Report in the Background

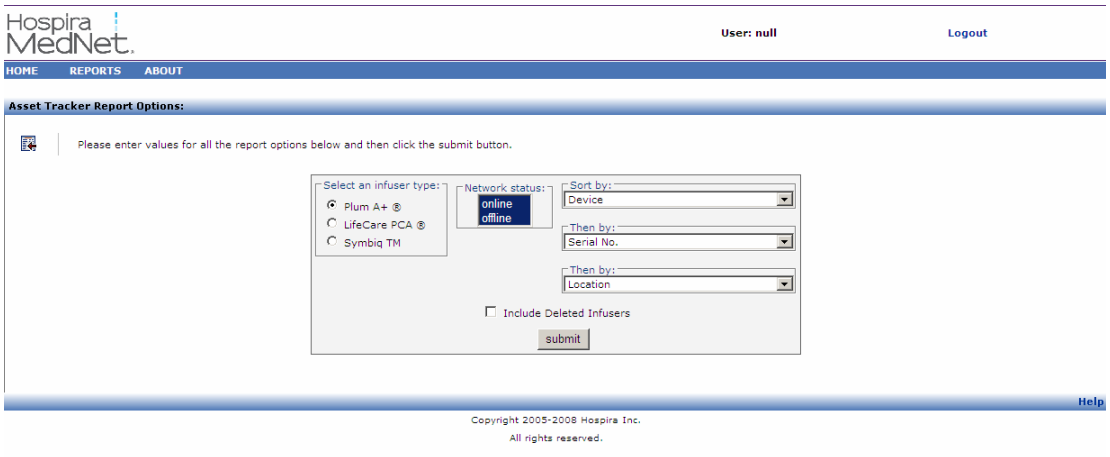
Run in Background is a “just in time” version of the scheduled reports. Rather than go through a formal scheduling of the report, Run in Background utilizes the same scheduling wizard, but actually runs the report immediately as a background task.

1. To run the report in the background, click on the icon circled below.



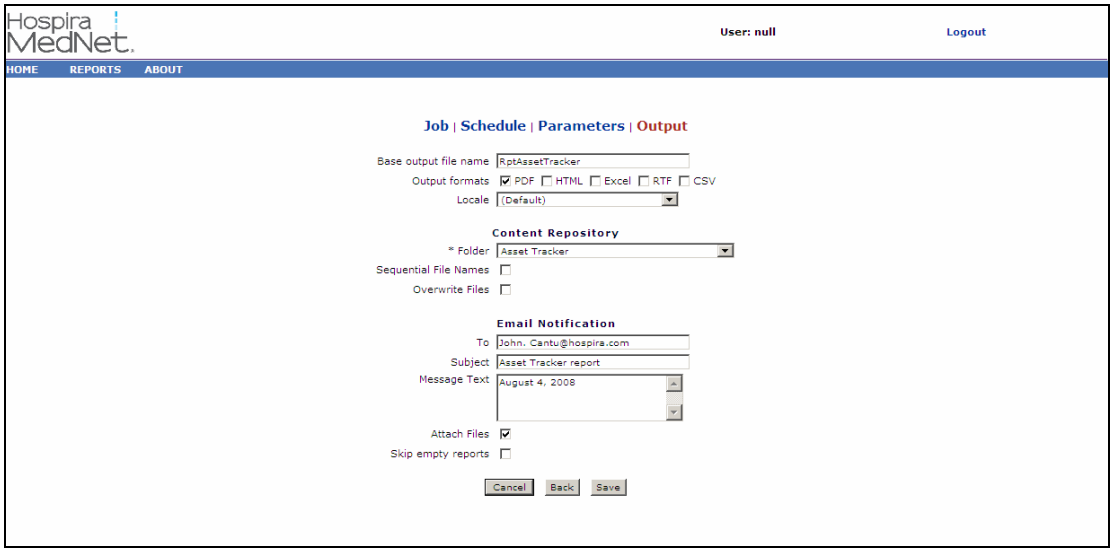
Report Name	Description	Date
Asset Tracker	Includes data to efficiently manage the entire inventory of infusers	09/24/2008 03:04
Asset Utilization	Information on the number of hours infusers have been in use	09/24/2008 03:04
Auto Programming	Information about usage of auto-programming functionality	09/24/2008 03:04
Auto-Programs with Unmatched Medication	Information about auto-programming requests resulting in No Drug Selected or Other Drug on infuser	09/24/2008 03:04
Edit Variance Detail	Line-item detail of every program where user received an alert and edited the program	09/24/2008 03:04
Edit Variance Summary	Summary of programs where user received an alert and edited the program	09/24/2008 03:04
Event/Alarm Log	Information about the events/alarms reported for a specific infuser	09/24/2008 03:04
Infuser Status	Snapshot of current infuser usage and power status. Identifies infusers that have not communicated for specific time period	09/24/2008 03:04
Infusion Status	Real-time information to monitor infusions and follow up on infusions running outside of limits	09/24/2008 03:04
Infusion Summary	High level summary of infusion activity, percentage of each type of infuser alert and user response to alert	09/24/2008 03:04
Line Usage Analysis	Visual depiction of infusion administration activity on each line on the Plum A+ infuser	09/24/2008 03:04
Medications Infused by CCA	Drill down to next level of detail about infusion therapy practices and response to alerts for each medication	09/24/2008 03:04
Medications Infused by Medication	Drill down to next level of detail about infusion therapy practices and response to alerts for each medication	09/24/2008 03:04
Medications Infused by Service Line	Drill down to next level of detail about infusion therapy practices and response to alerts for each medication	09/24/2008 03:04
Medications Selected by Time of Day	Number of infusions started during each hour of the day and whether a medication was selected	09/24/2008 03:04
Most Commonly Infused Medications	Graphical representation of the 15 most commonly infused medications selected from the drug library	09/24/2008 03:04
Next IV Due	Information about which IV fluids are due to facilitate timely preparation	09/24/2008 03:04
Override Variance Detail	Line-item detail of every program where user received an alert and chose to continue with entered value	09/24/2008 03:04
Override Variance Summary	Summary of programs where the user received an alert and chose to continue with entered value	09/24/2008 03:04
PCA History	PCA medication usage data for an individual infuser	09/24/2008 03:04
PCA Utilization	PCA therapy statistics including frequency of use for each mode and use of protocols	09/24/2008 03:04
Soft Limit Alert Responses	Summary of user responses to soft limit alerts by medication or by CCA	09/24/2008 03:04
Software Download	Status of downloaded infuser software including version and last transfer status	09/24/2008 03:04
Total Program Activity	Programming activity, including total edits and overrides for the selected time period	09/24/2008 03:04

The **Report Options** screen is displayed:

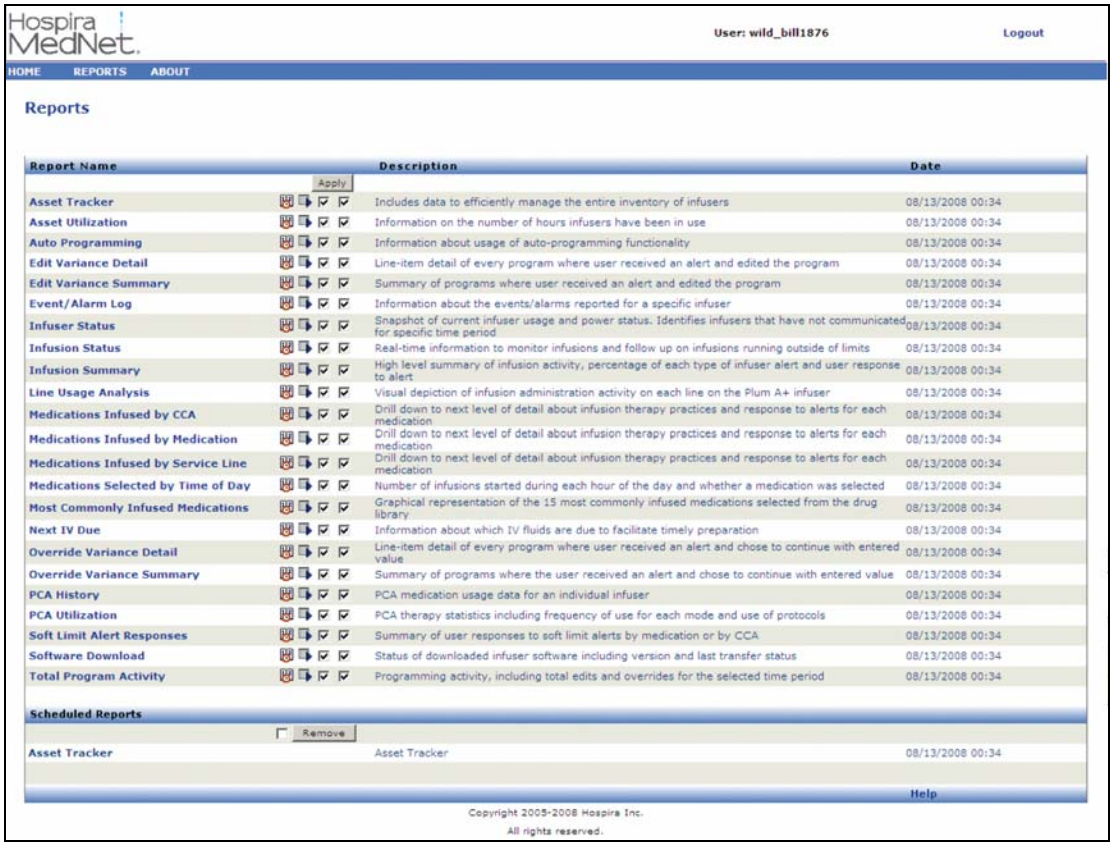


2. Complete the required information. See additional information in this chapter for your specific report.
3. Click **Submit**.

The **Output** screen appears:



4. Specify the base output file name.
5. Specify the output format.
6. Specify the report destination or repository (optional).
7. Specify the e-mail notification parameters (optional).
8. Check on the "Attach Files" check box to receive report file(s) attachment in your email (optional).
9. Click **Save**.


Hospira MedNet.
User: wild_bill1876
Logout
HOME
REPORTS
ABOUT
Reports
Report Name
Description
Date
Apply
Asset Tracker
Includes data to efficiently manage the entire inventory of infusers
08/13/2008 00:34
Asset Utilization
Information on the number of hours infusers have been in use
08/13/2008 00:34
Auto Programming
Information about usage of auto-programming functionality
08/13/2008 00:34
Edit Variance Detail
Line-item detail of every program where user received an alert and edited the program
08/13/2008 00:34
Edit Variance Summary
Summary of programs where user received an alert and edited the program
08/13/2008 00:34
Event/Alarm Log
Information about the events/alarms reported for a specific infuser
08/13/2008 00:34
Infuser Status
Snapshot of current infuser usage and power status. Identifies infusers that have not communicated for specific time period
08/13/2008 00:34
Infusion Status
Real-time information to monitor infusions and follow up on infusions running outside of limits
08/13/2008 00:34
Infusion Summary
High level summary of infusion activity, percentage of each type of infuser alert and user response to alert
08/13/2008 00:34
Line Usage Analysis
Visual depiction of infusion administration activity on each line on the Plum A+ infuser
08/13/2008 00:34
Medications Infused by CCA
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
08/13/2008 00:34
Medications Infused by Medication
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
08/13/2008 00:34
Medications Infused by Service Line
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
08/13/2008 00:34
Medications Selected by Time of Day
Number of infusions started during each hour of the day and whether a medication was selected
08/13/2008 00:34
Most Commonly Infused Medications
Graphical representation of the 15 most commonly infused medications selected from the drug library
08/13/2008 00:34
Next IV Due
Information about which IV fluids are due to facilitate timely preparation
08/13/2008 00:34
Override Variance Detail
Line-item detail of every program where user received an alert and chose to continue with entered value
08/13/2008 00:34
Override Variance Summary
Summary of programs where the user received an alert and chose to continue with entered value
08/13/2008 00:34
PCA History
PCA medication usage data for an individual infuser
08/13/2008 00:34
PCA Utilization
PCA therapy statistics including frequency of use for each mode and use of protocols
08/13/2008 00:34
Soft Limit Alert Responses
Summary of user responses to soft limit alerts by medication or by CCA
08/13/2008 00:34
Software Download
Status of downloaded infuser software including version and last transfer status
08/13/2008 00:34
Total Program Activity
Programming activity, including total edits and overrides for the selected time period
08/13/2008 00:34
Scheduled Reports
Remove
Asset Tracker
Asset Tracker
08/13/2008 00:34
Help
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Report Conventions

The following conventions are common to all reports:

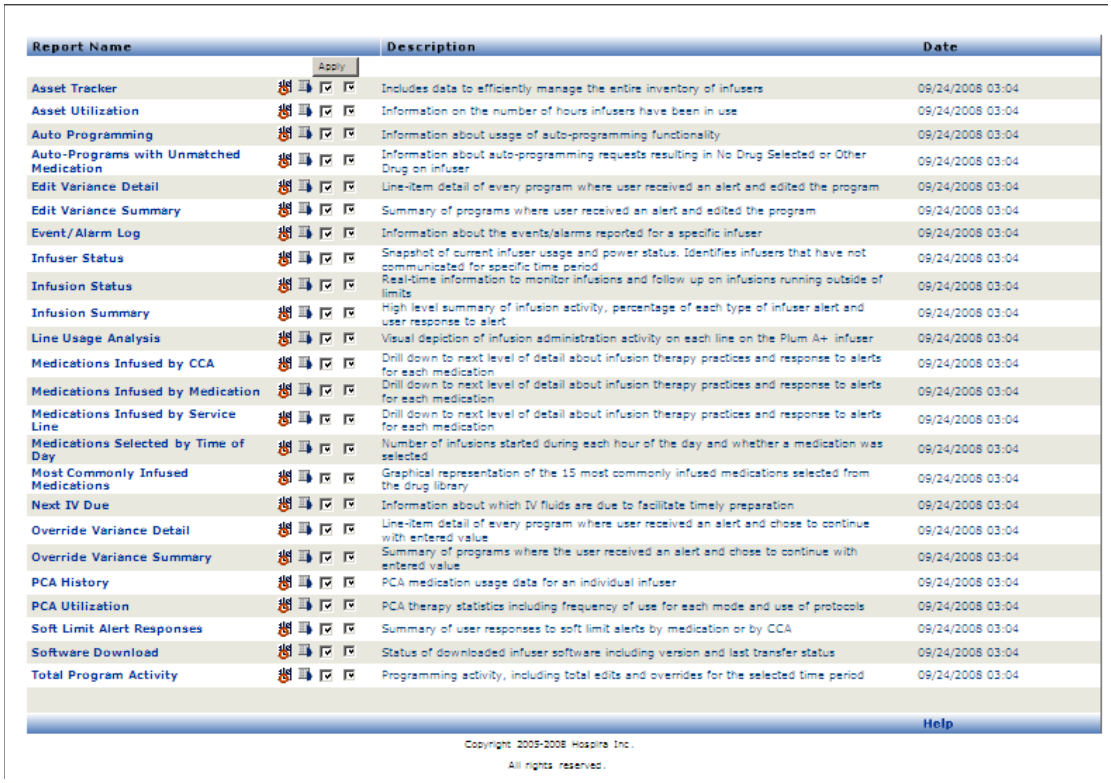
- Users with the appropriate privileges may generate reports using the Reports view.
- Drop-down lists display all valid selections. Items contained in drop-down lists may vary based upon your previous input and the system configuration.
- If a report features more than one sort criterion, the first field, Sort By, is required while the remaining Then By fields are optional.
- Reports only display data existing in your system. A report's content may vary depending upon your data and the time period selected.
- Reports may span multiple pages; if so, the report may be navigated using the buttons at the top of the page.
- Users may employ a "wildcard," or asterisk [*], to expand search terms. For example, the wildcard [Sm*] returns all data, such as Patient Name, that begins with the letters "Sm".

- If there is no data to display for a report or a field, a message displays to alert you that there is no data to display. When a report is grouped by CCA or Medication, and there is no data for a particular CCA or medication, a message will alert you to that effect.
- Reports will not display a medication's concentration when it has not been defined in the drug library.
- **Note:** Reports illustrated in this User Guide are intended to represent layout and typical content rather than actual data provided by any infuser or drug library.

Navigating

All reports are listed in the Reports view of the application. Users are permitted to view only reports that are available to their assigned privilege.

1. On the **Logged In Home View**, click Hospira MedNet® Performance.
2. The **Reports** view appears.
3. Click on the name of the report you wish to open.


Report Name
Description
Date
Apply
Asset Tracker
Includes data to efficiently manage the entire inventory of infusers
09/24/2008 03:04
Asset Utilization
Information on the number of hours infusers have been in use
09/24/2008 03:04
Auto Programming
Information about usage of auto-programming functionality
09/24/2008 03:04
Auto-Programs with Unmatched Medication
Information about auto-programming requests resulting in No Drug Selected or Other Drug on infuser
09/24/2008 03:04
Edit Variance Detail
Line-item detail of every program where user received an alert and edited the program
09/24/2008 03:04
Edit Variance Summary
Summary of programs where user received an alert and edited the program
09/24/2008 03:04
Event/Alarm Log
Information about the events/alarms reported for a specific infuser
09/24/2008 03:04
Infuser Status
Snapshot of current infuser usage and power status. Identifies infusers that have not communicated for specific time period
09/24/2008 03:04
Infusion Status
Real-time information to monitor infusions and follow up on infusions running outside of limits
09/24/2008 03:04
Infusion Summary
High level summary of infusion activity, percentage of each type of infuser alert and user response to alert
09/24/2008 03:04
Line Usage Analysis
Visual depiction of infusion administration activity on each line on the Plum A+ infuser
09/24/2008 03:04
Medications Infused by CCA
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
09/24/2008 03:04
Medications Infused by Medication
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
09/24/2008 03:04
Medications Infused by Service Line
Drill down to next level of detail about infusion therapy practices and response to alerts for each medication
09/24/2008 03:04
Medications Selected by Time of Day
Number of infusions started during each hour of the day and whether a medication was selected
09/24/2008 03:04
Most Commonly Infused Medications
Graphical representation of the 15 most commonly infused medications selected from the drug library
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PCA History
PCA medication usage data for an individual infuser
09/24/2008 03:04
PCA Utilization
PCA therapy statistics including frequency of use for each mode and use of protocols
09/24/2008 03:04
Soft Limit Alert Responses
Summary of user responses to soft limit alerts by medication or by CCA
09/24/2008 03:04
Software Download
Status of downloaded infuser software including version and last transfer status
09/24/2008 03:04
Total Program Activity
Programming activity, including total edits and overrides for the selected time period
09/24/2008 03:04
Help
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The **Report Options** screen appears and displays the available options for the report you selected. For a list of report options, and to view the report option screens, refer to the description for each individual report later in this chapter.

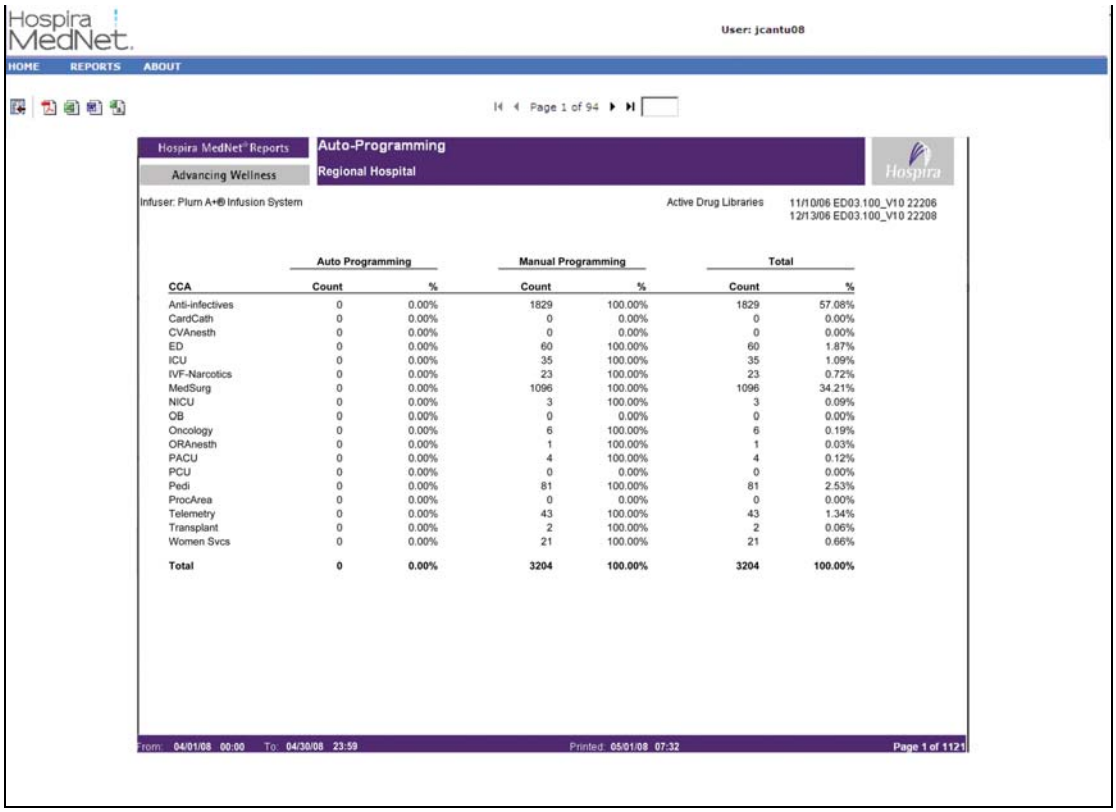
Running a Report

You may run any of the reports that appear in the Reports view. To run a report, open the **Report Options** screen, select the desired options, then click **Submit**. Report results will be displayed in the Reports Viewer window.

Note: If you attempt to view more than one report output at a time, navigating through one of the reports may produce an error.

Printing a Report

You can print any report that you generate. To print a report, convert the report into a PDF file, and print the report from the PDF document.


Hospira MedNet
User: jcantu08
HOME
REPORTS
ABOUT
Page 1 of 94
Hospira MedNet® Reports
Advancing Wellness
Auto-Programming
Regional Hospital
Hospira
Infuser: Plum A+® Infusion System
Active Drug Libraries
11/10/06 ED03.100_V10 22206
12/13/06 ED03.100_V10 22208
Auto Programming
Manual Programming
Total
CCA Count % Count % Count %
Anti-infectives 0 0.00% 1829 100.00% 1829 57.08%
CardCath 0 0.00% 0 0.00% 0 0.00%
CVAnesth 0 0.00% 0 0.00% 0 0.00%
ED 0 0.00% 60 100.00% 60 1.87%
ICU 0 0.00% 35 100.00% 35 1.09%
IVF-Narcotics 0 0.00% 23 100.00% 23 0.72%
MedSurg 0 0.00% 1096 100.00% 1096 34.21%
NICU 0 0.00% 3 100.00% 3 0.09%
OB 0 0.00% 0 0.00% 0 0.00%
Oncology 0 0.00% 6 100.00% 6 0.19%
ORAnesth 0 0.00% 1 100.00% 1 0.03%
PACU 0 0.00% 4 100.00% 4 0.12%
PCU 0 0.00% 0 0.00% 0 0.00%
Pedi 0 0.00% 81 100.00% 81 2.53%
ProcArea 0 0.00% 0 0.00% 0 0.00%
Telemetry 0 0.00% 43 100.00% 43 1.34%
Transplant 0 0.00% 2 100.00% 2 0.06%
Women Svcs 0 0.00% 21 100.00% 21 0.66%
Total 0 0.00% 3204 100.00% 3204 100.00%
From: 04/01/08 00:00 To: 04/30/08 23:59
Printed: 05/01/08 07:32
Page 1 of 1121

Report Display Format

Reports contain the following three main sections:

Page Header: The page header appears on the top of every page. The first page displays the report title and hospital name. Subsequent pages display the report title only.

Detail: The details appear in the middle of every page and contain the report data.

Page Footer: The page footer appears at the bottom of every page, and displays the time period of the report, print date, and page number.

Self-assessment

You need to generate some "on-demand" reports using Hospira MedNet® Software. You must choose a report to match your needs.

Which report can provide the information you need? Enter the corresponding letter in the space provided.

Information needed	Report
1. Average hours of use for Symbiq® infusers	
2. Details on how a clinician edited an infuser program after receiving an alert	
3. How often clinicians in each CCA accept or edit Drug Library guidelines during infuser programming	
4. List of all medication rule sets associated with a CCA	
5. List of infuser warnings and malfunctions	
6. Network status and Drug Library versions for all Plum A+® infusers	
7. Real time monitoring of ongoing infusions	
8. Total program overrides, subdivided by alert type	
9. Total responses to soft limit alerts, subdivided by medication type	
10. Which medications are used most in each CCA	

Answer options	
A. Asset tracker	**F.** Medications infused
B. Asset utilization	**G.** Most commonly infused medications
C. Edit variance detail	**H.** Override variance summary
D. Event/alarm log	**I.** Meds report
E. Infusion status	**J.** Soft limit alert responses

Answers: 1. B; 2. C; 3. F; 4. I; 5. D; 6. A; 7. E; 8. H; 9. J; 10. G

HMSS IT Implementation Training Guide

Module 6. HMSS Overview and Notes

Hospira MedNet® Software Suite (HMSS) is now offered in a hosted ASP (Application Service Provider) model. This model is called the Hospira MedNet® Managed System or HMMS. This Module provides an introduction to differences for a client using this system versus the traditional model.

This Module consists of 1 section:

- HMMS Overview and Notes

For training purposes only.

Refer to the detailed instructions Hospira MedNet® User Guides and Infuser System Operating Manuals prior to use.

6-1 HMMS Overview

Who: IT Team	**What:** Understanding the differences between the traditional model and the HMMS model of application delivery.

The HMMS system has different architecture and management than a traditional model.

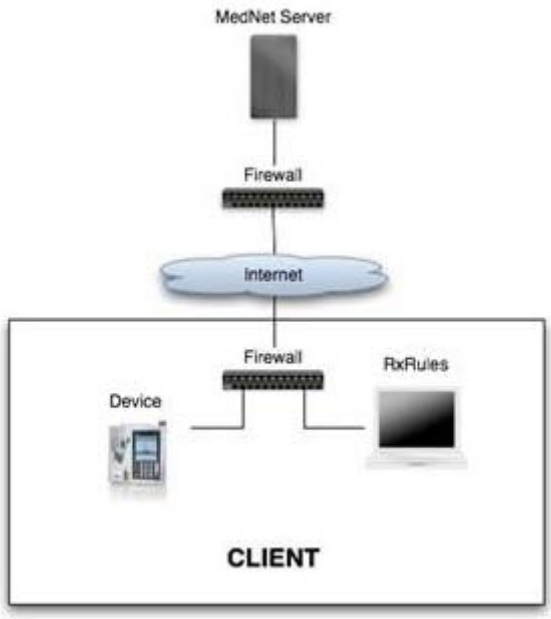
Upon completion of this section, the user will be able to:

- Describe the differences from the traditional model
- Understand the architecture of the system
- Properly receive support for the HMMS model system

Overview of HMMS

HMMS is very similar for all end users to the traditional system. The in-program activities described in this document do not change unless specifically stated in this section.

The main differences in the HMMS system are architectural. Instead of buying a server and installing and maintaining it at the client site, the server is hosted at a secure facility and made available over the Internet via an IP SEC tunnel. This tunnel will already be set up and functioning by the time this training is conducted.



Hospira MedNet® Clients

Hospira MedNet® Software Suite (HMSS) clients will still access the software in the same manner. If they have a shortcut or a favorite that points to the HMSS server, it will point at an external address instead of an internal one.

Hospira MedNet® Meds™ Clients

The Hospira MedNet Meds end users will also have an icon on their desktop that will point to a hosted copy of this software. In the HMMS scenario, Meds is not installed locally, but rather is externally hosted like the server. In order for this hosted Meds client to function, the pharmacist(s) will only have to download an Active X control from the application server to gain access to the remote application. If this Active X control is not installed when the pharmacist attempts to access the system, he or she will be prompted to install it. If this user chooses not to install the Active X control, or does not have the proper rights to do so, he or she will not be able to edit or finalize Drug Libraries.

The Meds client Active X control will be installed on the desired pharmacy user's PC before the IT Implementation process is complete for your site. However, if you would like to add new or re-imaged users to the system, you must install this control before they will be functional.

Note: The Active X control is not available as a discrete file or install routine, it must be downloaded from the site on first use.

Application and Database Maintenance

Database Maintenance and Backup will be conducted by Hospira IT staff that is familiar with the HMMS system. If you have any questions or concerns about the timing or process of these activities, please consult your IT consultant.

Product upgrades will also be conducted by Hospira. As a new upgrade becomes available, your team will be contacted in order to ascertain any downtime procedures, communications, or training your site may need.

Program Changes

Hospira will not typically allow HMMS customers to change the Hosted Server's internal settings. If your site desires one of the custom configurations described in this document, please call the TSO at the number in the next section.

Support

If support is ever needed for the Hospira HMMS system, please call the TSO number (1-800-241-4002) and identify yourself as an HMMS client.

Glossary

Active Drug Library: Worksheet that has been finalized and is available to send to infusers.

Alarm: Serious event at the infuser; remains active until someone responds or acknowledges the alarm at the infuser; e.g., an occlusion in the IV line delivering medication to a patient.

Alert: Event requiring explicit user input; e.g., overriding a programmed medication dose. CCA; soft limits may be overridden; hard limits may not (on Symbiq® infusers, an authorized password can be used to override a hard limit).

Clinical care area (CCA): A patient group in which the infusion therapy parameters are the same. A CCA may be the same as a physical nursing unit or may encompass a patient population or a clinical use. (e.g., ICU, Blood Products, Med/Surg, Orthopedics, Endoscopy).

Connectivity engine (CE): Component of the infuser that controls communication between the network and the infuser.

Default Drug Library: A pre-programmed Drug Library embedded in the infuser software; employed until a user-defined Drug Library is installed.

Drug Library Worksheet: Drug Library that can be edited but cannot be sent to infusers until it is finalized.

Drug Library: Collection of medication entries and infuser settings that, when used with compatible infusers, may reduce the frequency of human errors by restricting the ways in which medications can be administered.

Editing: Responding to an infuser alert by changing the value entered during programming.

Event log: Information stored by the infuser and forwarded to the server, pertaining to any occurrence deemed worthy of reporting.

Event: Any occurrence on an infuser deemed worthy of reporting.

Hard and soft limits: Upper and/or lower dose limits for a selected medication and CCA; soft limits may be overridden; hard limits may not (on Symbiq® infusers, an authorized password can be used to override a hard limit).

Media access control (MAC) address: A unique identifier attached to most forms of network equipment.

Overriding: Bypassing an infuser alert and accepting the value entered during programming.

Parameters: Values entered by the user to define the desired report output. Examples include Time period, CCA, Medication, etc.

Patient-controlled analgesia (PCA): Self-administration of analgesics by means of a programmable pump.

Programming: Sequence of steps used to configure an infusion, ending with pressing the Start key on the infuser.

Rule Set: Rules guiding the administration of a medication; defined in a Drug Library and applied at the infuser; depending on infuser type, rules may specify limits on dose rates, volumes, and/or amounts.

Variance: Deviation (%) of a programmed value from the limit defined in the Drug Library

Warning: An indication advising of a potentially dangerous situation; e.g., low battery.